# SUPPLEMENT.

# The Mining Journal,

## RAILWAY AND COMMERCIAL GAZETTE:

**FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.**

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## Original Correspondence.

### THE SCOTCH IRON TRADE—No. XXV.

THE PARKHEAD, LANCEFIELD, AND DENNYSTON FORGES.

Any sketch of the manufactured iron trade of Scotland would be manifestly incomplete unless it included those colossal establishments that supply forgings for the marine, engineering, and kindred works in and around Glasgow. The forges of Scotland hold a pre-eminent position among works of their class. It is to the excellence of their workmanship that the Clyde is in great part indebted for the unrivalled reputation it has been enabled to attain as a centre of the iron shipbuilding trade, and to them also the shipbuilders of the Thames and other English rivers are glad to resort when any order requiring special strength or nicety requires to be executed.

The Parkhead Forge was commenced nearly 40 years ago by the firm of Messrs. Rigby and Beardmore, whose names are still associated with its management. The works cover about 20 acres of ground, and are located at Parkhead, a growing suburb of Glasgow. The establishment has nearly everything within itself, there being a large malleable iron department attached to it, where plates, sheets, and angle-iron are turned out. Here there are 28 puddling-furnaces, of the ordinary reverberatory description. In another part of the works some of Siemens' gas furnaces were erected rather more than two years since, but they have not been in use very long, and their operation has not been attended with the results that were expected. The puddlers have strenuously objected to their introduction, and complain that they cannot work with them satisfactorily. It was intended when the Siemens' furnaces were first introduced to extend their use, but only the six producers originally built, and the few furnaces attached, have as yet been erected, and it is not likely that the system of Mr. Siemens will be further developed at these works. Mr. Gorman's patent has also been experimented with at Parkhead, but the workmen have tried to have it discontinued, and prefer to stick to the old form.

There are two mills for making plates and sheets capable of turning out about 50 tons daily. The one mill is adapted for 20-inch and the other for 22-inch plates, and they are both worked by a horizontal engine of 300-horse power. There are two of Rigby's steam-hammers in this department—one 2½ tons and the other 3 tons. The waste heat from the furnaces is utilised in the boilers, of which there are 20 overhead. The forge stands about 20 yards distant from the puddling department, and is the older portion of the works. It contains 11 steam-hammers, varying from 30 cwts. to 7 tons. Attached to each hammer there is a powerful steam-crane, the heaviest being capable of lifting a dead weight of 60 tons. In the smiths' shop, which adjoins the forging department, there is a large number of hearths on each side, and in the centre five more cranes, all supplied by Forrest and Barr, and varying in power from 6 tons to 12 tons. The next place reached is the machinery shop, where the forgings are finished, and which contains all the different kinds and sizes of turning, planing, boring, and slotting machines, although none of them have any special features. One of the boring machines drills a 10-inch hole with ease, and the machinery as a whole is so heavy as to be available for any kind of work required in marine architecture. A vertical condensing engine supplies the necessary motive power to the whole of the machinery in this last shop. The Parkhead Forge is of such a respectable age that it has learned, like Bianca, not "to change true rules for odd inventions," and it is not, therefore, a place in which new patents predominate. But some of the tools in use are, perhaps, the most powerful of their kind to be found in the kingdom, and it may be a recommendation that many of them, including a monster shears, which cuts through a bar of cold iron 4 in. square as if it were a piece of pasteboard, were made at Parkhead on the works. It may be mentioned here that for forging purposes scrap iron is largely used, and is in many cases preferred. At Parkhead there are several benches, where the scrap iron is hand-picked previous to being put into the furnaces.

Coming next to the Lancefield Forge, we find that it has quite a national history. It was here that many of the largest forgings for the Great Eastern and other naval monsters were made. It was originated about the year 1827 by Messrs. Fulton and Neilson, the latter gentleman being the patentee of the hot-blast, which has done so much to revolutionise the iron trade of this country. Established first in Lancefield-street, on the north side of the Clyde, the *venue* of the forge was changed in 1869 to Scotland-street, Tradeston, where a site extending to 21,000 square yards was acquired. The works now consist of four departments, the rolling mill, the forge, the smiths' shop, and the machine-shop. The rolling-mill has been erected subsequent to the other parts of the establishment. There are upwards of a dozen puddling and heating furnace, and a 20-inch mill. No merchant iron is made on the premises, the heavy forgings being made out of rolled scrap bar. A horizontal engine of 35-horse power, drives the machinery in the mill, which is of the usual description.

The forge is immediately adjacent, and at right angles to the rolling-mill. It contains 13 steam-hammers, most of them having been supplied by Condie. The heaviest is 7½ tons, and was made at the Govan bar-iron works. There is the usual number of puddling and heating furnaces in the forge, and a new gas furnace, patented by Mr. John Donald, one of the proprietors, and admirably adapted for doing light work. This furnace is a Swedish invention, and the inventor having come over to this country to have it developed, met Mr. Donald, who took him by the hand, and erected at Lancefield for experimental purposes the first furnace of the kind built in this country. This furnace effects a very considerable saving in the cost of fuel by the use of triping, riddled dross, or other inferior qualities of coal, and its first cost is nothing more than that of an ordinary furnace. A small rotary engine, driving a pair of fans, supplies the blast, and the furnace only requires 15½ cwts. of coal in the twelve hours. At Mr. John Elder's shipbuilding yard several furnaces of the kind have been built for smithy purposes, and have answered very well.

The machine-shop measures 120 ft. by 130 ft.; it is fitted up with an array of powerful machinery, including four large lathes for turning crank shafts, a disc-turning lathe, a rudder-pintle machine, and slotting, shaping, and vertical machinery. Much of the heaviest work required for the vessels in H.M. Navy has been done here. Among their most recent orders of this kind the company executed the forgings for the Hydra, a turret ship, built by John Elder and Co. on the Clyde, and the Hecate, built by the Messrs. Dudgeon, of Millwall, London. Stern frames weighing upwards of 20 tons are not uncommonly turned out, and turret centres, glacis plates, stems, stern ports, crank shafts, are among the staple articles of production. The Lancefield Forge is close to the Greenock section of the Caledonian Railway, to which it has access by a siding, and is within easy distance of the principal shipbuilding firms on the Clyde, with which its business is chiefly done.

The third and only remaining forge of any note in Scotland is that of Dennyston, at Dumbarton, about 14 miles from Glasgow. This forge was established in 1854 by the late Mr. William Denny, who was long one of the largest shipbuilders on the Clyde. The Dennyston Forge is altogether under one roof, the building measuring about 200 ft. square. There are in operation 18 scrap furnaces and a large number of smiths' hearths. From 40 to 60 tons of scrap iron are used daily. This scrap is chiefly obtained from the shipbuilders and marine engineers, and is supplied in quantities sufficient to render the use of pig unnecessary. This is a great advantage, inasmuch as scrap iron is at once cheaper than the best Scotch brand, and answers better for forgings. Nine steam-hammers, varying from 30 cwts. up to 10 tons, are at work within the forge, and in their immediate vicinity a number of heavy cranes are fitted up, each being actuated by a small donkey-engine of its own. One of these cranes can lift a dead weight of 100 tons. They have all been forged on the premises, and are constructed in the strongest possible manner, being supported by heavy iron rods attached to the roof. The forge is close to the Helensburgh section of the North British Railway. The consumption of coal is from 70 tons to 80 tons per day, and about 300 hands are employed in the various departments. Although the Dennyston Forge was built mainly for the requirements of the firm of Messrs. Denny Brothers, shipbuilders, it supplies forgings for many other firms on the Clyde and elsewhere.

### THE NEW MINES REGULATION ACT.

THE "MANAGER" OR NO "MANAGER" AT OUR COLLIERIES AT PRESENT.—THE DIFFICULTY OF OBTAINING CERTIFICATES OF SERVICE.—UNCERTAINTY OF THE TERM "MANAGER."

SIR,—Whether the definition of the term "manager" has been purposely left so vague as it really is I do not pretend to be able to say, but judging from circumstances, I should think such to have been the case. Allowing it to be so, my opinion is that the framers of the Bill had an object in view for so doing; what that object was is, of course, best known to themselves. It is now becoming obvious to the class of men called (by the President of the Staffordshire Institute) "middlemen," who have made application for certificates, that the uncertainty rests with them as to whether they are to become "managers" or "competent persons" for the mining engineers under the Act. If there be no managers at present under the rules of the new Act, there is the *man*, call him what you will, acting under the rules of the old Act for the three months allowed by the new one, and though a person cannot be qualified to be a "manager" of a mine to which the new Act applies for more than fourteen days without being registered as the holder of a certificate, yet the owner of such mine shall not be liable if he proves that he has taken all reasonable precaution to prevent the mine being so worked. Therefore, if the authorities refuse to grant the certificates when applied for by properly qualified persons, according to the law they have given to us, there is no alternative but to go on as usual, disregarding the Act, or let the works stand.

My impression is that these "middlemen" are in the way, and if they do not show a bolder front than they have hitherto done their claim to certificates will amount to nothing, and the certificates will go to men of college attainments, and the "middlemen" have to become their "competent persons." I should very much regret this, and the owners would also have to regret; and from what Mr. Timmins, at the same meeting, said of his workmen, they are not favourable to the man of theory, but positively refuse to work under the immediate direction of a mining engineer, and are determined to have some "middleman" with practical knowledge. And Mr. Field complimented those workmen for their common-sense view of the matter. It appears those men prefer the man that can take off his coat, and show them as well as tell them, in preference to college attainments. A good practical "middleman" is *the* man for the "manager" of a colliery. There are theoritical men, with college attainments, who pretend to manage, perhaps, a dozen collieries, only they have good staffs of practical "middlemen," not only to assist but actually to do the work for them. Such a "manager" could not conduct a single colliery without the assistance of a staff of "middlemen."

My opinion is that the object in view, both in the framing of the Bill and by the version on some points of the Bill since given, and the present uncertainty in obtaining the certificates, is with the view of granting all the certificates to men of college attainments, and the "middlemen" to become their "competent persons." *We all know what this means;* I say, therefore, let all the "middlemen" of the United Kingdom demand certificates, which by the Act is their just right, and if not granted show to the world that they are competent *men*, as well as "competent persons," and that they intend to act for themselves—not by joining the ranks of McDonald, though that would be more creditable than the denial of the certificate.

MIDDLEMAN.

### IMPROVEMENTS IN SMELTING.

SIR,—So many propositions have been made in the *Mining Journal* for improving the common method of manufacturing iron that have not proved capable of practical application that I am sure you will allow me space for a brief description of an invention which certainly seems to possess the necessary elements of success. The ores with carbonaceous matter and flux are charged into the blast-furnace, and reduced or smelted by the combustion of a mixture of inflammable gas and air introduced into the furnace through tuyeres, the inflammable gas being produced by passing steam over red-hot coke in heated vessels. In the tuyeres the gas meets and mixes with atmospheric air, by which combustion with an intense deoxidising flame is produced. Coal gas, or other gaseous hydrocarbon, may be used in place of, or in addition to, the gas described. The process is applicable to the re-heating of iron and other metals, and the distillatory apparatus will, in my opinion, be largely used for producing gas from various solid carbonaceous matters; and for producing this gas in combination with steam, the inventors, Mr. S. B. Smith, an intelligent electro-metallurgist of this town, in conjunction with Mr. J. W. Willans, of Middlesborough, have also an improved generator, which is very ingenious.

The distillatory apparatus is a compound retort composed of a series of vessels arranged upon a central hollow trunnion or axis in the direction of radii. The gas generated in the vessel is carried away by the hollow divided trunnion, which is furnished with valves. By the rotation of the compound retort and the charging and discharging of its several portions in succession, the manufacture of gas may be made a continuous process. The generator consists of a series of vessels arranged about a vertical hollow axis. The vessels are filled with heated coke, and the coke kept at the required temperature. By the passage of steam through the heated coke it is decomposed, and forms with the heated carbon a gaseous mixture, which is conveyed to the furnace. By means of a tuyere having an inner and outer nozzle, the former being adjustable, and having a central pointed rod, the required proportion between the air and gas entering the furnace by the said tuyere may be determined, and a large or small flame produced.—*Birmingham, Jan.* 7. J. F. B.

### N. ENNOR ON TIN STAMPING AND DRESSING—No. V.

SIR,—I am convinced that at present there is a great and unnecessary loss sustained by the mine companies on the rivers, through the inefficient machinery used by them, therefore, as the spring advances, I shall try some experiments in accordance with my views to see if that loss may not be greatly reduced. Again, with reference to the tin contaminated with sulphur and arsenic (say) in the proportion of 1-10th part of tin to 9-10ths of sulphur and arsenic, which every practical tin miner and dresser would consider a very awkward lot of stuff to have to contend with, is this properly treated? Should it be stamped fine or rough? I say rough; for, although tin associates with sulphur and arsenic, it does not mineralise with it to any value, and the particles are generally small, therefore it should be stamped rough, and passed through three or four self-acting jigging machines, the bottom to be of the size of the grates now used. The ragging should all go to the burning oven, and when well burnt it should be sifted or jigged again, which would take out all the fine, and in this a large portion of the tin would be found, as the sulphur and arsenic would be lightened, and the greater part of the tin would fall out. The "rows" should be treated by a light stamps, purposely made, or passed through a good rubber, and so nearly all the tin would be caught, the slimes being thus hindered from becoming of much value. I say all such tinstuff as I have described should be burnt twice, and then stand a few days after each burning, exposed to the air, before being dressed for tin.

There is nothing equal to the law of gravitation for dressing almost every ore, but the reason why jiggers which act on this principle are not more used is in consequence of the time taken up in putting in and skimming out, but four self-acting jiggers all following each other, and what passes off going through a revolving sieve to divide and send it to two separate buddles, would reduce the waste portions one-half; all the other portion would have to be burnt, as it would in either case, but in this way nearly all the tin is caught, whilst, if worked as now in buddles, let the buddles be what they may, rough and hutch grains will roll to the tail, and a mass of round particles of tin will go back also, the finer particles going off as slime to find their way down the Red, or any other river having a strong current.

With regard to the cost, supposing there is a 30-head stamps at work upon average tinstone, it is calculated to get over 30 tons in 24 hours; then, I contend, with a grate twice the size, fixed sloping, it would pass through 30 tons in twelve hours; then, send this through four jiggers, and then the round grate, to two buddles, and the actual work is to throw out the ragging, and clear the hutches and buddles (you will observe that it has not been handled before), so what it comes to is, How many hands will be required to do this? Two sets of jiggers and buddles are required, one set to be emptied whilst the other is filled. The hutches, too, should be self-acting, and the stuff from them taken to two buddles.

Dividing the tin stamped (say, 30 tons), 15 tons would be tin and "whits," or 15 cwts. of tin per day of twelve hours. I started on these grounds, supposing half the quantity stamped to be tin and "whits." I know this is going to extremes, but the argument is good. Then, suppose the 30 heads stamp 60 tons in twenty-four hours, worth only ¼ cwt. of tin to a ton, that would be 15 cwts. per day, or 90 cwts. in six days (say, 4 tons per week), if worked night and day, for jiggers could be worked at night as well as stamps.

A great mistake is made by brokers and mine sellers when they report the value in each ton of stuff, and the quantity of tons the lode contains, holding out that all that is required is more stamping power; they are only deceiving the unwary. Let all working tin mines begin with 10 or 20 heads first, and erect others as required. Parties holding mines with large poor elvan courses, which can be risen for a few pence, or, (say) 1s. per ton, may require 50 or 100 heads, but mines with only regular tin lodes take time to open out. How many do I see now in my rounds that have more stamping-power than tinstuff, half the heads being idle. Some eccentric individual may point out what Dolcoath, Tincroft, Great Wheal Vor, and about ten other mines in the county are doing, but I am not at a loss for an answer. I can reply that each of these mines have been a century opening out.

If those embarking in tin mines begin steadily, with a small number of heads well used, and the mine well managed by one head of a different sort, most of the tin mines will pay at the present price of tin; in fact, I believe tin mines well managed are (as I told the Welsh mine seller) the best mine speculation ever known in Cornwall within the last century, taken as a whole; and half of our tin lodes are shallow, and will take time to open out, but they will open quite fast enough for the hands we have to work them. Our tin mines at this very time are ahead of our population. They are not getting a shilling's worth of work done for a shilling just now.

The smelters, like the Cornish engineers, have had it all their own way for a number of years, but they must use their brains to give a helping hand in improvements, so that they may smelt tin cheaper. I have a few points respecting this to name; they may not be right,

but I have no doubt someone will show me where I am wrong, and so something will come out for the public good. N. ENNOR.

## ENGLISH AND AMERICAN FINANCIERING.

SIR,—A few weeks ago there appeared in the columns of your valuable Journal a letter from "A Victim of Honourable Men," on "English and American Financiering." The subject is an all-important one for the British investing public, and one which I would fain see more fully discussed and ventilated in the columns of the leading mining organ of the world. Your correspondent, the "Victim of Honourable Men," bewails, and justly so, the want of strict morality in our financiers, and with justice, also, he advises those amongst us who like to sneer at the gigantic frauds of Wall-street to look nearer home. Now, I quite agree with your correspondent that many frauds are perpetrated in this market in a perfectly legal and "honourable" way, but I hold that in most cases where "John Bull" becomes "John Gull," J. B. has himself to blame and no one else. Take American enterprises, as your correspondent does, to illustrate my meaning—First, I will select the Nevada Freehold Properties Trust; this affair started with a large capital, which was to be issued in "certificates" of 2*l.* each, bearing 12½ per cent. interest, and it was stated that two years interest was deposited at the bank. At the end of a year the concern went into liquidation, on, I think, the secretary's petition. Now, within a few weeks of the time when the prospectus of this concern appeared in the London papers an article appeared in the *New York Herald* ridiculing the whole affair, showing the property was only a waste tract, that it had never been examined by an engineer at all, and that the ore which Major-General Monk Mason said he had extracted from the property was bought from a Wall-street broker. For this property many thousands of pounds were paid to the vendor, who actually refused to complete his contract because he did not get the whole. All the trustees have gone for their holidays, but owing to press of other business had not time to bid their creditors good-bye. Your correspondent cites Eclipse. This mine is one of a class—Sao Vicente, Anglo-Brazilian, General Brazilian, Taquaril, Don Pedro, &c.—the only one which has done anything being Don Pedro. Put all the capital of these mines together, and all the dividends, and what result does it show?—Dead loss. When Eclipse came out everyone knew the promoter, and they had previous experience of his mines to guide them.

And now as to the big American mines—Eberhardt and Aurora, South Aurora, Utah, Camp Floyd, Richmond, Flagstaff, Emma, and others, are all likewise of a class. These mines have every one been purchased for less than 1-10th of what they were made to fetch here, and the consequence is that, though some of them may be really good mines at a certain price, they cannot pay a dividend on the enormous capital invariably required for them, and directors' fees in proportion. It is quite well known who are the men who have launched these companies, and the *modus operandi* is not hard to tell. Brokers and dealers have any number of free shares to induce them to get their clients interested in a company. Being interested themselves they quote the shares at a premium, and gradually they become absorbed by the British public. This was notoriously the case with Emma shares, as the speedy drop from 34 to 16 proved.

When Englishmen know these things it seems to me strange beyond measure that they should go into American enterprises without knowing *something* about them. A New York paper, the other day, wondered if English people really thought that Wall-street dealers were not 'cute enough to sieze on a good thing at a fair price when they saw it. I commend that observation to investors in American mines.

Were there no opportunity for investing in home mines I could understand people sending their cash to America, but when we have so many good progressive mines at our own doors, so to speak, I for one am inclined to let our American cousins find their own cash. There is no lack of opportunity for investing in English mines either dividend-paying or progressive. For the former there is Carn Brea, Dolcoath, Devon Great Consols, Van, &c., all safe investments; and amongst new concerns which have lately solicited public support, I would mention Assheton, Gorsedd and Celyn Level, East Llangynog, North Pool, Treleigh Wood, Terras, Perran Wheal Vyvyan, Wheal Tregoss, Wheal Lucy, Wheal Mary, Wood Close and Polgooth, Llanarmon, New Hingston, Parbola, Prideaux Wood, Trevarrack, and Bamfylde Copper (the latter brought out last year with 1*l.* shares, which are at a premium), and the Nant-y-Ricket Copper and Lead Company, which has recently, I see, been noticed in your columns, as starting with prospects equal either to the Van or Devon Great Consols. JOHN BULL.

## MINING IN COLORADO.

SIR,—Some time since I made mention of the Levatt Mine, of this place, in my correspondence, and perhaps a few more particulars of this celebrated mine will not be uninteresting to your numerous readers. The mine is situated in the creek at Mountain City, and has a run of 1000 feet in length on the course of the lode, through the creek, before entering the mountains. On either side there are two shafts, now down 200 feet from the surface, one of which is in course of sinking to a deeper level, and when completed I think an improvement in the quality of the ore may be expected, the ore for milling being of a low grade, as the Yankees term it, at the present depth, as you will see by the returns for the past month, when about 1200 tons of ore was crushed, realising $12,000, and leaving a profit of $2 per ton. The cost of raising the ore in the mine, sinking shafts, driving levels, timbering the mine (which is a heavy charge), pumping, hoisting, carriage to the stamps, wear of machinery at the mine and mill, and the rent of mill at $500 per month is barely $8 per ton, thus leaving a profit of $2 per ton on the mill ore, in addition to which must be added from 45 to 50 tons of smelting ore, at from $100 to $150 per ton, thus leaving a profit of nearly $8000 per month to the fortunate proprietor, Mr. Beala S. Buell. To the west of this mine, and on the same lode, is the N. P. R., which is let on lease, and I am glad to find the mine is improving in depth, and will, no doubt, when as deep as the Levett fully reward the lessees for their unwearied perseverance in developing this property. The Gunnell is also being worked on lease, and is leaving fair profits to the parties, who are working the mine in a miner-like manner. The Brigg's Mine is drained to the bottom, and large quantities of ore are being raised, which, I am informed, is yielding well, averaging from 10 ozs. to 12 ozs. to the cord, or about $16 per ton, under the stamps, besides large quantities of smelting ore, which must be leaving very large profits, there being no cost of carriage or rent of mill, having all their machinery for pumping and stamping on the mine, and all under cover in one house, and well arranged for all requirements.

The Bobtail Tunnel is now within 40 feet of the lode, and by the time you get this no doubt the water will be all drained, to the depth of the tunnel, from that and the adjoining mines, which will open up large quantities of ground that will pay for working; and, as I am informed that there is an engine and pit-work on the road from the east to drain this mine to the bottom, I have no doubt all this run of mines will shortly be in full operation. I am not at present aware if there is any arrangement made between the different owners of the property for the drainage or not, but I hope for the welfare of honest and legitimate mining, and the working of a good property, that they will come forward and act as men, and not be as dogs in the manger any longer. The driving of the tunnel has been a very expensive concern, and great credit is due to Mr. Rogers, the agent, and his company for the courage and perseverance they have had in carrying out this work.

I am informed that the Union Company's property is being offered in the London market, or at least a part of it—the Bates and Baxter lode—which I consider to be a fair speculation, if a sufficient length of ground can be obtained, and at a fair price. Parties in purchasing this property will do well to see that they do not purchase any incumbrance with it, as there is a judgment against it for a large amount of money.

I am glad to inform you that we have at last got the railway completed to Black Hawk City, about a mile from this place; the cars came in to the depôt yesterday for the first time, and I think this will be a great benefit to mining in this district, as we shall be able to get coal at a cheaper cost than wood; also the transit of ores to the East and to England much cheaper than heretofore, the cost being now from here to New York about $30 per ton; and I think a great many mines will now work that have been idle for the want of purchasers to buy their ore, especially those containing lead and a low percentage of silver and gold, which have been worthless.—*Central City, Dec.* 14. H. B. GROSE.

The case of the Rocky Mountain National Bank, at Central, against the Union Gold Mining Company, after a week's trial at Golden, was decided on Saturday night in favour of the plaintiff, and the sum of $28,870·26 was awarded by the jury. This is the second time that a verdict has been given in favour of the bank. The action grew out of the mining company overdrawing, and then seeking to evade its responsibility.—*Herald*, Dec. 12.

## CAMP FLOYD SILVER MINING COMPANY.

SIR,—I must request the attention of the shareholders in this company to an important letter I have just received from Mr. Henry Sewell. It appears that Mr. Sewell has at last been permitted to inspect the company's mines. Why he should be excluded at all I am at a loss to comprehend. Mr. Sewell's letter is of so practical a character that I purpose giving it in detail:—

"I still hold 167 shares, which I refused to sell at 15*l.* per share: 350 ft. of outcrop at surface has given 870,000 bullion; the remainder of the outcrop, 2250 feet in length, should, in the same proportion, give 3420,000. This is without counting any great discoveries at deeper levels. Wilder ought to have made eight incline-shafts on the outcrop instead of sinking three perpendicular shafts in barren rock through the limestone, meanwhile sinking several inclines from surface on the ledge he could have brought out enough rich ores to mix with the poorer ores, and have averaged 850 per ton for at least one or two years, till the deeper works produced new bonanzas."

It is very strange, as I have remarked in a former letter, that the rich ore which was proved should have been neglected by the management at the mines, and explorations of so unprofitable a character continued, to the absorption of capital and to the disappointment of shareholders. Here in this mine there is an outcrop of (say) 2600 ft. in length, the face of which for 350 ft., as Capt. Shaw informed me, had been taken out. One ton was sent to England, and a rich sample it was: 30 or 40 tons more (I think) were worked at the company's mill. This ore was said to be so rich as to require a guard to prevent depredations. I further understood Capt. Shaw to say that a large quantity had been buried under the unsaleable dump pile, that strange medley of all sorts—chlorite of silver, barren limestone, rock, and rubbish. I have good reason for believing that so long as this rich outcrop ore was being worked, mixed with the dump pile, the returns in silver were large, and directly the source of rich ore failed the true character of the "rich" dump pile became evident.

In my opinion two things should be done at once—Firstly, open up and prove the outcrop, as suggested by Mr. Sewell, and tests made of its value for the entire remaining unexplored length—2250 ft. or thereabouts. Let the explorations be simply to test the value of the outcrop; this would cost little and prove the fact of value. Secondly, with customs ore at the company's mill there must be, I should imagine, customs work to keep our mill going from the numerous mines in the Camp Floyd district. Messrs. Walker's mill, I am informed, is never idle, but it works on customs ores. Why should the splendid mill of the Camp Floyd Company be so? It is said to be the most perfect mill in the district. Let it take its position, and realise such profits that shareholders may receive something in dividends for their outlay.

I hope the directors will take immediate action, and not defer it until too late, when with capital exhausted they are compelled to meet the shareholders, and ask not only for a renewal of their confidence but also for a renewal of capital, to try and redeem a position which should never have been lost. F. BENNETT.

1, *New Broad-street, Jan.* 6.

## THE CAPE COPPER MINING COMPANY.

SIR,—Permit me to call your attention to an error which has crept into your admirable and exhaustive summary of the Progress of Mining Industry during 1872, which appeared in the Supplement to last week's Journal. You state with reference to the Cape Copper Mining Company that upon the accounts for 1871 being made up it was found that the profit realised was 67,000*l.*, and you estimate from this statement that the profit for 1872 will be considerably more than 90,000*l.* Allow me to state that from the circular issued to the shareholders on the 11th ult. it appears that the profit of 67,000*l.* was realised upon a portion only of the raisings of 1871—viz., upon the sale of 6165 tons out of a total raising of 7843 tons—so that the profit upon a further quantity of 1678 tons has yet to be added. Much of this quantity has since been sold at advancing rates.

I crave leave to correct the error, lest it may mislead investors into undervaluing this splendid property, which from all that I can gather, both as to the reports from the mines, and the probabilities of the copper ore market, never presented such brilliant prospects as it does at the present moment. A SHAREHOLDER.

*Jan.* 6.

## ERRORS COMMONLY ATTRIBUTED TO MINING MEN.

SIR,—It is evident from the tenor of the generality of writers whose views are given to the public through the medium of the *Mining Journal* that the practical mining man must still continue to be censured for what he is not guilty of. It shows how little the reasoning faculties of self-styled rational men is exercised. Misconception, misconstruction, and misrepresentation of facts so frequently occur from ignorance, innocent in itself though it may be, but pernicious in its effects, it must be allowed to be that too much care cannot be exercised in arriving first at correct views, and, second, in conveying correct impressions concerning them.

I suppose there is no subject of equal importance upon which men write with greater confidence and less knowledge than that of mining; men who have no knowledge whatever of its fundamental, and little, if any, of its rudimentary practical principles set themselves up as teachers of others, and talk in terms most unqualifiedly of what they know little or nothing about. It has been, and still is, an error to suppose that practical mining men are prejudiced against what are called the innovations of science. The prejudice appears to me, after a calm and deliberate survey of the subject, to be on the other side, excited no doubt to some extent by the hesitancy with which, in some instances, proposed schemes are adopted, arising mainly from their experimental, or extremely problematical, character; and, in others, because the pet schemes of sundry speculators are unceremoniously rejected on the ground of their utter inapplicability and uselessness for the purposes pretended.

The scientific man is not debarred from making experiments in regard to mining, nor are any of the sciences, if found to be practicable, rejected. The science of geology, of mineralogy, of metallurgy, and of mathematics, including trigonometry, are all embraced and consulted, whilst chemistry and mechanics—the latter especially—are prominently recognised branches of mining, and natural science relating to the phenomena of lodes and cross-courses is studied with an earnestness in some quarters commensurate with the importance of the subject and the interests which are involved, and deductions made for practical purposes as frequently and as correctly as the premises will permit. The phenomena of the displacement of lodes by cross-courses, and of cross-courses by lodes, is as embarrassing to the man of science as it has hitherto been to the practical man—neither is able to say, in many instances, which is cause or which is effect, or whether such a relation subsists between them or not, as both lodes and cross-courses may be, in many instances, but parts of an effect of an unknown cause or causes, and if that point could be determined by any abstract principles of science yet the same abstract principles of science might fail utterly to indicate the direction of such displacement. Natural science is not sufficiently advanced to enable anyone to frame rules by which this important knowledge may be arrived at. The only knowledge which can be relied upon to guide the miner up to the present time must be derived from observation directed to certain specific effects rather than to their causes. The unknown can only be inferentially descried from facts disclosing themselves to the senses. Theories have been invented—I use the latter term deliberately—to explain the phenomena, and to direct the miner in his search for missing lodes, but hitherto without avail, as such theories have not been deduced from scientific principles, and have been alike failures in practice and repugnant to reason, and, therefore, cannot obtain currency in practical circles.

Geological knowledge is highly important to mining, and in some cases is absolutely essential to its success, but that science is limited in its application, restricted to generalities, merely applying to individual cases in a general sense, and do not enable the miner to determine at what precise points in the prolific rocks metalliferous deposits take place. It recognises the classes of rocks which are ore-bearing, and so does the miner, and so did he long before geology was known as a science.

With regard to science enabling one to determine in a practical sense where metalliferous deposits abound, that can only be arrived at by actual experiment, practical demonstration occularly realised, and is not by any means the result of speculative theories arriving at natural facts. As well might the chemist furnish particulars of the several ingredients which compose a piece of rock entrusted to him for analysis, and prior to the analysis being made, as that the miner or geologist could determine what was contained in the ground previous to its being properly opened. The utmost which either can do under such circumstances is to speculate on probabilities from the best recognised data.

Chemistry is an experimental science, and so may mining—though strictly not a science—be said to be; and as the facts which it is the business of the former to discover and classify can only be arrived at by an elaborate process of analytical investigation, so mining can only be determined in regard to the value of the objects to which it is directed by a systematic exploratory process of investigation; and as no one would ever think of censuring the chemist for not being able to determine beforehand the constituent parts of composite substances, so no more is it proper to censure the miner for not knowing what has hitherto eluded the vigilance, the inventive genius, and the prescience of all science.

To excel in either of the sciences proper an abandonment of the mind to its pursuit, and the pursuit of kindred auxiliary subjects, must be made. It is not only discouraging but unjust to censure or to be censured for not knowing, independently of the faculty and of the inspiration what must confessedly be admitted to be unattainable but by intuition. If such men as De la Beche, Murchison, Lyall, Hopkins, Smyth, and our own painstaking and laborious Henwood—the latter especially—have failed to arrive at satisfactory conclusions regarding the phenomena of the displacement of lodes by cross-courses, and of cross-courses by productive lodes, and of the nature, origin, and formation of metalliferous deposits, surely it can constitute no valid ground of rebuke to the miner for simply failing where no one has yet succeeded, or is likely to succeed.

That deplorable mistakes are made in mining, both home and foreign, cannot be denied, and that is known to no one more fully than it is to the intelligent practical man, but whilst he knows the origin of these things and their specific causes, he is constrained to silence from motives dictated by common prudence. I shall only add that in some instances the unnecessary losses in mining are the result of official ignorance, but that in a majority of cases the losses proceed from an irresistible pressure from without, brought to bear by designing interested parties; and many a poor tool, lacking the moral courage to do what he would, and what he preferred to do, has been doomed to finish his official career by immolation, and passes thence into obscurity, loaded with sins not essentially his own. ROBERT KNAPP.

## THE RED RIVER.

SIR,—Week after week for some time past letters have appeared in the Journal respecting the Red River, tin wasted, &c. Whilst the complaints have been long and loud, the practical suggestions for saving it to the mines have been few. Mr. Ennor, in the Supplement to last week's Journal, would have us use rougher grates, believing thereby a saving would be effected both of tin and in the cost of stamping. With him I partially agree, believing that with our (in some places) present mode of dressing our stamp grates are much too fine, inasmuch as we make far more slimes than we have machinery for, buddles not being adapted for anything except the roughs. The tin lost to the mines is contained in the slimes principally, hence on following the river from Dolcoath to the sea we find the men who hold the river allotments have acres of frames. Many of them laugh at the agents who contend that nothing is equal to the buddle for slimes. I notice in one of our largest mines this error, however late, is about to be corrected, some hundred or two frames being in course of construction; but cannot help thinking if they were in the valley below, and buddles where the frames are, so as take out all the rough tin first, the adventurers would be benefited, and the river men chagrined.

Another important consideration in tin dressing is to have an abundant supply of clear water. You might just as well try to settle any light substance in oil or Stockholm tar as in some of the water used in many of our own mines for that purpose. All the water in our mines should be pumped to surface—none allowed to escape by the various adits. Possibly if the mine tin-dressers were not so largely interested in the streams below more attention would be paid to this. Mr. Symons, in his last on this subject, argues the impossibility of the agents agreeing with the streamers below; perhaps he is right, but if the agent and the streamer be one and the same person I cannot see well whom he has to disagree with. This I know, that nothing like the quantity of slime tin is now sold from the mines as there used to be, in proportion to the crop. Why?—then they had frames in the mines, now they have buddles, Borlase's, centre-heads, and others, and with them a host of streamers, with a fair sprinkling of agents amongst them, all prepared with frames to catch the little fish they deemed so insignificant for their masters.

By properly laying out tin-floors—first buddles, then frames—I do not think we are stampting too fine. By paying proper attention to this we yet may be spared the infliction of Chinese to save our tin.—*Redruth, Jan.* 8. M.

## THE RED RIVER.

SIR,—I expected to find that some gentleman would have ere this answered Mr. R. Symons's enquiry (in the *Mining Journal* of Dec. 28) as to how 50 tons per month of tin could be prevented from finding its way down the streams from the tin mines into the Red River, to be secured by squatters along its banks, to say nothing of the unknown quantity, in addition to the 50 tons monthly, that is conveyed away to the sea by the descending water. A good deal has been lately written on this subject, but, as Mr. Symons justly remarks, it is easy to find fault with the agents' defective knowledge or action, and not suggest how they may do better. "T. H." tells us that at the lowest calculation the loss to the tin mirers is 40,000*l.* a-year, and only 16 mines empty into the Red River. These are truly startling statements, and I am in no way surprised from all this that Americans should criticise Cornish mining. It is a very serious matter for the mining companies that they should go to all the expense of mining and stamping the tinstuff and yet allow their tin to escape to such an extent (in dressing) as to enrich their neighbours, while many of themselves are losing by their undertakings. Mr. N. Ennor recommends that his stamps be employed in the reduction of the tinstone, and that rougher grating and more grate-room be used than is the custom at present. I would say employ Mr. Ennor's stamps by all means, that is, if they can perform more work in a given time and with less power than is needful to work the stamps now in vogue, but I beg to differ from that gentleman regarding the coarse grating. I contend the tinstone will have to be reduced to a finely divided state in order to effectually separate all the ore from its associated gangue, and in the performance of this much of the tin is of necessity converted into very minute particles, which will readily float away to any distance in the agitated water escaping from a dressing-floor, unless means are resorted to calculated to arrest all matter contained in the apparently useless puddle, but which in reality contains much valuable ore, as the squatters it appears have every reason to know.

Now this desirable object (preventing the tin from going down the stream) may be very cheaply and readily accomplished by a simple contrivance I shall endeavour briefly to describe.

To each dressing-floors should be attached a series of catch-pits,

in the last one of which should be constructed a filtering apparatus, and into those pits the water discharged from the dressing-floors should be conveyed; in this way the coarse matter would deposit itself at the head of the series and the finer portions lower down, until, finally, the most minute particles would be retained on the filtering material, which should be sufficiently close to prevent anything insoluble in water making its escape.

By this means it may be ascertained in what state of division the tin is carried away in the water, and how far profitable a further treatment of the contents of each pit would on examination prove, I do not mean to say that the tinstuff thus secured would pay for dressing over and over again a number of times, but I will say that if some squatters can make a profit of 500*l.* per month it would well pay the mining companies to treat it separately, and not allow so much good work to escape to the squatters below. I am convinced that if this contrivance were adopted, and the skill of the dresser exercised upon all matter deposited in the pits and retained on the filter, we would hear little of the silver-mounted harnesses sported by squatters, and squatting on the Red River would only be recorded as a matter of the past. Y. T.

*Glandore, Co. Cork, Jan. 7.*

## THE RED RIVER.

SIR,—With your permission, I beg to make one or two remarks in reference to the tin which is supposed to be wantonly allowed to wash down the above-named river. I am not in any way connected with the claims on its course, nor yet with the mines from which the tin flows, and it may, perhaps, be thought presumptious for me to say anything on the subject; but having been conneeted with tin mining for many years, and devoted considerable attention to the treatment of slimes, I venture to offer an opinion.

It is a well-known fact that tin will go off with the slimes, and in confirmation of this statement let the Red River tell its own tale, which with all the appliances on its course, extending for two or tree miles in length, tin still escapes into the sea, the sand on the beach being valued at 1*l.* per ton for tin. Surely the mines cannot be expected to catch this, which slip through so many fingers. Some of the mining setts in that rich district no doubt are small, and will not admit of much machinery being erected on the water-course; and if the slimes were stacked. to be worked over at some future day, it would occupy acres of land, and I very much question when dry and hard if they are rich enough to pay for working. I have taken samples from the pits just below the mines, which contained from 2 to 3 lbs. of tin to the ton; if this had to be handled it would leave but a very small profit. The squatters, as they are called, wash the slimes direct from the pits into 20 buddles or frames at one time, whereas if it were washed from a burrow it would take several boys to work up the stuff to get it in a fit state for buddling. In some cases the tin may be stamped through too fine a grate, but I do not believe it is a general thing; Cornishmen are too wide awake for that, and unless someone can show something beyond mere statements tin will continue to escape in small quantities as long as the mines are at work.—*Horrabridge, Jan. 8.* TIN MINER.

## THE REVIEW OF MINING FOR 1872—No. IV.

SIR,—The year 1872 closes with the brightest prospects for the Cornish miners. Both tin and copper fluctuated 30*l.* a ton during the year, still the latest quotations show that prices have again attained a fair position. Violent fluctuations have taken place in iron, which from its highest fell 6*l.* a ton. Strikes and the high wages paid both to workers of metals and colliers tended to diminish the output of raw material, as well as finished articles. High wages and disaffection among workmen simply mean less work and advanced cost of product. Copper has not been higher since 1858; tin is equal to the famine price of 1871. Spelter and lead are both as high as can be expected, having regard to the distribution of these metals throughout England, and also their production in colonial and foreign countries which bring the metals into competition with the yield of home industry. The demand for the current year for almost all metals is likely to prove good, and in the absence of speculation we may look with confidence for a fair trade and fully ruling prices. The mines of Cornwall, however, suffer greatly from high costs and scarcity of labour, advance in prices of coal and materials, and the want of liberality of landlords, coupled with their absurd interference in the mode and principle of working them.

Many of the mines in Cornwall are prosecuted at heavy losses to the adventurers, yet the landlords reap a rich harvest from dues, while shareholders continue to work on without any benefit. It is not too much to ask the rebate of dues to at least 1-50th for such mines as North Roskear, Seton, North Crofty, South Frances, East Basset, North Pool, West Tolgus, Lucy, and Boscaswell Downs, while the costs of purchase and erection of additional and necessary machinery is being incurred by the latter.

Tincroft, with Capt. W. Teague as the manager, occupies the chair of state at this hospitable close of the year 1872. Cornwall bears off the palm as regards product and dividends, and in respect to her tin mines the future bids fair to place this branch of the county's industry on a pedestal far higher than it has ever attained before. Not only are the old mines to continue to pay well, but there are many others on the verge of paying that possess all the elements of prospective vitality, with promise of more than ordinary success.

Seton and North Roskear have long discontinued dividends. There was a friendly duel between Tincroft and Dolcoath to top the dividend list for 1872. Capt. Teague won the race. What will be the result of rivalry at North Roskear and Seton? Will Capt. Josiah Thomas succeed at North Roskear, or will radical changes and practical skill and economy again effect for Capt. Teague the success that followed his career at South Carn Brea and Carn Brea Mines? We heartily desire success to both. In the next place we have Capt. Vivian and Son pushing on with energy and practical experience South Condurrow, New Dolcoath, and South Tolcarne. There can be little doubt that two, if not the third, of these mines will develope themselves into dividends during the current year. We have also the ponderous and rarely-failing leverage of capital subscribed for working the mines under the management of Mr. Matthew Greene. The practical and vigorous working of Penstruthal Consols, West Jewell, and Cathedral Mines establishes the benefits of paid-up and ample capital, when compared with the tedious and often distrustful action of repeated calls under the operation of the Cost-book System, while the local executive appear determined to achieve all that skill and science, with practical economy, can accomplish, and in the shortest period of time—the latter desiderata being of first importance in successful mining. In former days Penstruthal was a brilliant meteor, and it is satisfactory to have to record discoveries that promise in the future results equal, if not surpassing, the past.

Mr. Greene has in Wales another prize in Van Consols, adjoining the Van, and herein again he shows his insight of the true principle of successful enterprise—paid-up and ample capital; the results are cheap materials and machinery, and active operations underground, culminating in 30,000*l.* reserves of ores unwrought. This mine is likely to first enter the dividend list of all the competitors surrounding the great "Leviathan." This gentleman is now introducing another valuable mine in Wales, with a capital of 50,000*l.*, and judging from the eagerness expressed on the Exchange for shares, there is no question but that it will prove a success.

Mr. West, of St. Blazey, had his usual success at the Phœnix. It is not luck alone with this gentleman that ever ends in prosperity, for both as an engineer, miner, merchant, and banker he is equally distinguished, while his enduring industry and energy are alike recognised. South Crofty has been long talked about, and shares have ruled high, but the decline of 40 to 50 per cent. in price ought to disappoint no one, for hope so long deferred is certain to make the heart sink. Several good setts are now upon the *tapis*, and one especially. West Trumpet we are now inducting our friends into. The company consists of 32 shares of 125*l.* each, and upon subdivision greatly enhanced value will unquestionably become established. The race for the next Christmas chair of state will lie between Tincroft, Dolcoath, and the Van. We will back the latter against the two former. Who will give two to one against her?

Trumpet Consols, paying 8000*l.* a year dividends, is one of the cheapest tin mines in Cornwall; at 15*l.* a share it pays 13⅓ per cent. interest. The mine is wholly free from market excitement, the shares being mostly held by local capitalists. The dividends for 1872 were 35 per cent. on capital, and for the current year they will probably augment. To the east of this mine is the Lovell, the dividend prize of 1872. Under the control of Messrs. Bartlett and Chapman the works rapidly progressed, and during the last half of the year sprung into profits, with every likelihood of a long course of advancing prosperity. The lode is variously valued at from 60*l.* to 180*l.* per fathom at the several points, and the property is peculiarly remarkable for the slight cost in comparison with value of yield. To the west of the Trumpet Consols is West Trumpet, comprising the lands purchased by the late Joseph Lyle, the most successful miner during the last quarter of a century, at a cost of 16,000*l.*, solely for its mineral wealth. This property has now passed into other hands, and a company is being formed with 32 shares of 125*l.* each. Judging from the reports of several well-known and recognised mining authorities there can be little doubt but early and important discoveries of mineral wealth will follow. The district is full of tin, but, like Montgomeryshire, until the discovery of Dyliffe, Van, Van Consols, and Nant-y-Glo, no one had faith in ores being found in paying quantities, so the district of Wendron and Helston had no disciples until Trumpet Consols, East Lovell, Lovell, and other successes startled the incredulous, and drew capital and practical enterprise to the mines, while the results already accomplished far surpass those of any other locality. There is no question of the shares being well taken up in West Trumpet, or that they will greatly advance upon subdivision. Early application is, therefore, desirable, either direct to us or through the members of the Stock Exchange.

Of the 62 dividend mines eight declared dividends for the year 1872 ranging from 12,288*l.* up to 48,000*l.* Four are lead mines, two being situate in Salop, one in Montgomeryshire, and the other in Denbighshire. These eight mines may justly be designated the stars of mining enterprise, and the results are such as to startle while they fascinate the greed of capitalists, and stimulate the industry and energies of all associated with practical mining.

In the first instance we will refer to Tincroft, upon which a capital has been subscribed of 54,000*l.* The dividends up to this date amount to 256,050*l.*, or (say) 474 per cent. on the outlay, and the workings exhibit all the freshness of youth, while to all appearances there is a brilliant future in prospective. The market value is 342,000*l.*, and the dividends yielded equal to 15⅜ per cent., while upon the capital of the company the gains were 89 per cent. for the past year. There can be no question that both the London and Westminster and the London Joint-Stock Banks are wonderful commercial successes, as the dividends for the past half-year of 20 and 25 per cent. annually on capital testify, still there is a solidity about this mine that renders it paying 15¾ per cent. against these banks of about 5 5-17ths, and 7 13-16ths per cent. on the market value that renders Tincroft a far preferable investment to either.

Dolcoath consists of 4296 shares, 10*l.* 14*s.* 10*d.*, marketable at 67*l.*, or (say) 287,833*l.* for the entirety. The dividends for the year 1872 were 10*l.* 12*s.* 6*d.* a share, or 99 per cent., while the purchaser of shares at that price would have received 15½ths per cent. The total dividends reach 431,032*l.*, or 936 per cent. on the capital. When this property is regarded in comparison with foreign stocks—as for instance, Honduras, Spanish, Turkish, Egyptian, or Italian, which pay in the most favourable case only two-thirds of the annual interest—no one can be otherwise than favourably impressed with the solidity and value of the Dolcoath Mine, more especially as under different phases and companies it has been continuously at work for upwards of a century. Adjoining this mine is the New Dolcoath, selling for less than 25,000*l.* This mine, if properly worked, cannot fail to emulate her rich neighbour.

Carn Brea Shares at 150*l.* each, pay 10 7-16ths to the proprietor, and 44 per cent. on capital called up. The dividends in the aggregate reach the large sum of 301,000*l.*, being 860 per cent. on the money expended. These three mines are at the base of a range of granite hills, and were exceedingly rich formerly for copper, but in penetrating through the clay-slate the lodes became equally productive for tin in granite. It is not that the ores are very rich, it is the quantity that tells. The greatest depth attained shows no signs of even approaching exhaustion.

The other mine—South Caradon—exhibits still more marvellous statistics. The capital subscribed was only 640*l.*, and the dividends for last year were 1920 per cent. (12,288*l.*) the sum total amount to 357,632*l.*, or 55,880 per cent. The yield is copper and in close proximity we have West Caradon and East Caradon. The first was formerly very profitable, and the latter still pays dividends, for 1872 the sum of 1436*l.*, which made the total 92,006*l.* on 16,516*l.* capital. All of these companies are constituted on the Cost-book System.

The mine that commands the greatest commercial value is the Van—570,000*l.*, on 63,750*l.* called up. The yield is lead and blende, which gave dividends of 42,000*l.* for the past year (say) 66 per cent. on capital, and 7*l.* 12*s.* 6*d.* per cent. on the market value (38*l.*) of shares. This mine is comparatively of recent introduction, hence the aggregate gains compare less favourably than in regard to the Minera, Foxdale, Great Laxey, and the Lisburne; stlll the whole capital has been returned, with an excess of 88 per cent. At one time this property sold for 1,000,000*l.*, but at that time its real worth was open to speculation, which time and development have now to a great extent determined. On the same lodes is the Van Consols, shares in which sell at about 5*l.* 10*s.* each. There has been an important discovery made here, and it is stated that reserves of lead ores now reach 30,000*l.* This mine is watched with lively interest by the initiated, and it is highly probable that the price will run high during the spring months. In conclusion, we may add that the Van has commenced the year with the quarterly dividend of 15*s.* (say) 3*l.* annually, or close on 8 per cent., on market price.

The Minera has given more dividends than any other lead mine to which we shall refer—namely, 556,050*l.*, on a paid-up capital of 45,000*l.* The gains divided last year were 10 per cent. on the market value of 270,000*l.*, but the shares are difficult to purchase. The dividends, 1872, were 27,000*l.*—*i.e.*, 60 per cent. on capital—while the aggregate amounted to 1235 per cent. This property is situate in Denbighshire, and is very ably managed.

In Salop we have the Tankerville and the Roman Gravels. The first declared dividends of 14,400*l.*, and the latter 12,600*l.* over the past year, and it is somewhat surprising that the market value runs so high—namely, 180,000*l.* and 228,000*l.* respectively. These two companies are "limited," so are the dividends—namely, 8 per cent. on Tankerville and 5 20-38ths Roman Gravels. It appears evident to us that the Cost-Book System is the best for investors if they can secure 15⅜ per cent. on current worth from such stable tin mines as Tincroft and Dolcoath.

As regards the Roman Gravels, however, it is satisfactory to observe that the dividend this week is 6*s.* per share, an advance of 9*d.* on the average of last year. Surely this must necessarily add a couple of pounds to the market value of shares.

The next four mines in importance are situate in Cornwall, and each yield tin. The gains for 1872 were—Kitty (St. Agnes), 8590*l.*; Cook's Kitchen, 9187*l.* 10*s.*; Trumpet Consols, 8000*l.*; and East Pool, 7200*l.* These companies respectively yielded, on current price of shares (Dec. 31), 13½, 13½, 13½, and 8 per cent. Still, why East Pool, which has ever been a very ordinary mine in product and gains, should sell at 12½ years' purchase, while the others command only 7½, is a mystery to everyone save those admitted behind the scenes, and have a hand in holding the reins.

South Carn Brea gave 24 per cent. on its capital last year, and Terras 15 per cent. We may add that Capt. Teague knows how to work a mine, and Mr. Endean the market for shares. Both are valuable in their respective positions. The constituents of the two are wide apart, still the elements of both are useful. Let the investor utilise the former, and the speculator, who floats on the surface currents of events, take advantage of the latter.

Alas, poor Yorick! what of and, oh, where is Grenville? During the past year this company declared dividends of 7*s.* 6*d.* a share, amounting to 1942*l.* To pay this sum and to engender confidence amongst market dealers, tin sold was credited up to the latest date, and the costs allowed to fall back a month in arrear. At the meeting held this week the executive declare that the large debit balance of 1303*l.* 11*s.* 5*d.* is occasioned through charging up this back cost and the falling-off of the produce of the 90 and 100 fm. levels, added to the lessened price of tin. The difference between the two sums of 1942*l.* and 1303*l.*, is 639*l.*, just 9*l.* short of a 2*s.* 6*d.* dividend! it is, therefore, evident that Grenville ought not to have paid any dividends during the year, as, without any working cash balance in hand, there was not money enough to fairly divide gains. The consequence is that shares foisted up to 13*l.* each, loudly advocated and quoted in almost every paper, daily and weekly, have had to succumb, while the management broadly avow that, as regards the future, the chief reliance is on the South Condurrow lode. Surely this speaks volumes in favour of the latter mine, and likewise attests the weakness of other points at Grenville.

West Seton and Basset appear gradually to be becoming exhausted, so far as the already discovered deposits of copper are concerned, still there are many chances in favour of both. These mines have been prizes of long standing; the latter was paying dividends in 1834 or 1835, and formerly comprised the Buller and East Basset setts, but surrendered the grants rather than incur the expenses of opening the ground. Had this surrender not taken place the Basset would have surpassed the Devon Great Consols in yield, gains, and brilliancy. As it is the Basset declared dividends for 1872 of 44 per cent. on its paid-up capital, which raises the gains in the aggregate to 12,448 per cent.

The Wicklow Copper and Sulphur Mines, in Ireland, are falling off in profits, still gains of over 1,000,000*l.* beyond the capital have resulted. The Mining Company of Ireland has a large subscribed capital, but the dividends compare unfavourably with the market value. We regret that in respect to the Sister Isle we have nothing encouraging to add. The earth is as full of minerals as the seas teem with fish. Nothing but enterprise and industry are required to ensure success.

There are several new dividend companies in the list this year—Wheal Whisper, 500*l.*, 1*s.* per share; Glasgow Caradon, 10*d.* per share; Prince Patrick, 1*s.*; Shelton China Clay, 1*s.*; yet as all these are upon the Limited Liability principle—*i. e.*, groping in the dark, directors declaring dividends without publishing balance-sheets, and the market value being wholly involved in obscurity, we shall defer further comment until our next Annual Review. We may add, however, that the paid-up capitals are respectively 10,000*l.*, 40,000*l.*, 18,000*l.*, and 10,000*l.* Wheal Uny declared a dividend of 817*l.*, and Pendarves United 512*l.* These mines are both in the calling list (see *Mining Journal*). Were these dividends earned, and were they justified or desirable? Another form of dividend is that of East Ballliswidden, which pays 8 per cent. interest on capital for the first three years. The principle is unique and quaint, and appears to take well with the public. The shares are at a premium of 75 per cent., fully paip-up. The direction is sound and practical, while the prospects at the mine are of the most encouraging character.

Among the old mines that have revived we may refer to Margaret, 896*l.*; Kitty (Uny Lelant), 256*l.*; and Spearne Moor, 121*l.* These dividends are wholly attributable to the current price of tin, and, on the whole, they do not possess very great commercial features to attract purchasers. The mines, however, may prove locally valuable for many years to come. The products are somewhat chronic, and the dividends, we opine, will prove spasmodic. Providence Mine has declared dividends quarterly without intermission for 21 years until the last audit, when the credit balance was shown to be only 310*l.* 3*s.* 5*d.* The dividends for the year were 1680*l.*—14¾ on capital and 7½ in market price of share. The gross profits amount to the sum of 117,280*l.*, equal to 1013 per cent. The prospective shows strong promise of renewed vitality.

North Levant is fast establishing itself an important prize; the gains were for 1872 the sum of 2800*l.*—say, 13 per cent. per annum, and 8¾ on price of shares. The dividends appear to have been fairly earned, while the prospective is fraught with promise. If this mine does not prove a brilliant prize it possesses the elements of continuity and advancing prosperity.

Cargoll declared dividends of 31¼ per cent. on the market value for the year 1872. There must be something rotten in the state of Denmark, or there is room for a rapid and material advance in the price of this concern. West Wheal Frances pays investors 7½ per cent. on ruling quotations; Penhalls, 10 per cent.; and Wheal Jane, 14½ per cent., still the shares are not favourites, while market dealers either ignore or overlook their merits. New Pembroke declared dividends of 2240*l.*, and the position of this mine is such as may some day establish an important and brilliant prize. North Hendre, a Welsh lead mine, declared the same dividend as last year—5 per cent. on the capital of 30,000*l.* Wheal Mary Hutchings paid 30 per cent. on its capital, but we must defer our notice, as we are disappointed in receiving the report of an authority in whom we place confidence. Mary Ann has been a dividend mine for about 27 years, still paying 10⅜ on its capital, while the shares sell at par. There is not much scope for discoveries at this mine—hence ten years' purchase is high enough.

In St. Just there are several substantial and permanently valuable mines, amongst others we shall refer to Botallack and Wheal Owles. The former pays 11 3-7ths, and the latter 12½ per cent. on current value. The shares, however, are firmly held, and in all probability the purchase of ten in either would send the prices from 140*l.* to 250*l.* as regards the former, and from 200*l.* to 400*l.* per share for the latter. Botallack has paid 123,950*l.* and Wheal Owles 41,800*l.* in dividends. Spearne Moor, Ding Dong, Boscaswell Downs, North Levant, Balleswidden, Levant, Pendeen, and St. Just Amalgamated are all situate in the same district, which is one of the most ancient and prosperous for tin of any throughout Cornwall.

The Devon Great Consols come next, and, after paying upwards of 70,000*l.* a year on a capital of 1024*l.*, the dividends for 1872 were 6144*l.* only. We can, however, excuse this old favourite for a time, while the projected works are being carried out; for since 1843 or 1844 the dividends have been 1,192,960*l.*, or 116,500 per cent. on the expenditure—*i.e.*, 116*l.* 10*s.* for every 2*s.* subscribed on the 10,240 shares constituting the company. The mine has been favourably reported on for yield of tin in depth, and under the rich masses of copper.

Hingston Down is a market favourite, and the shares sell at about nine years' purchase. The mine has been in operation for a long period, with moderate success only. The aggregate dividends amount to 67 per cent. on the capital.

Phœnix is an old mine, revived under the practical control of a skilful engineer, and we are pleased to record the profits of 4700*l.* for the past year. The capital is 25,000*l.*, but the shares are firmly held, and very rarely change hands. The total gains have been 239,950*l.*, or 959 per cent. on the capital subscribed.

The Great Laxey, situate in the Isle of Man, has proved an exceedingly rich mine, dividends of 225,750*l.* having been distributed. The market value still rules as high as 225,000*l.*, although the dividend was only 2 per cent. for the past year. It seems to us that the property is more than half exhausted, so far as profits are concerned, and investors will do well to remember that 50 per cent. gains beyond the entirety must be made during the ensuing 10 to 12 years, in order to reimburse the present market value with 5 per cent. interest.

West Chiverton declared dividends of 30*s.* per share during the past year, notwfthstanding every evil report, and we are pleased to record another 10*s.* dividend during the first week in January, 1873. The market value is 12*l.* per 3000th share, and the total dividends have been 154,125*l.* upon a capital of 30,000*l.* At one time this property sold for 250,000*l.* sterling, and there is yet scope for future discoveries, enhanced dividends, and market prices. This is still the best lead mine in Cornwall, the dividends having exceeded those of Herodsfoot by 660*l.* and Mary Ann by 3400*l.* There is little doubt but the executive will do all that practical skill and energy can accomplish to push pioneer points of operation, and we fully expect that during the current year important discoveries will be made.

The great strike in South Wales is already keenly felt. At the quarterly meeting on the 8th, held at Wolverhampton, the prices of iron show strong evidence of advancing again to recent abnormal quotations. Singles rose 2*l.*, and were freely purchased at 16*l.* a

ton. Bars were 20s. higher, and Earl Dudley's pigs rose to 7*l.*, a rise of fully 20s. on previous sales.

Coal has advanced another 2s. a ton, and coke 5s. a ton.

The spirit of speculation will soon awake, money will again be abundant, and the bank rate low, notwithstang that Germany will absorb 18,000,000*l.* gold during the year. Prices will be rampant over the ensuing six months, enterprise will flourish, while the prices of metals all tend to promote and render mining prosperous.

*London, Jan.* 10. R. TREDINNICK,
Dealer in Stocks and Shares.

## THE CENTRAL VAN LEAD MINE.

SIR,—Through an inadvertence two words were erroneously introduced into my letter on the Central Van Lead Mine, which appeared in the Supplement to the *Mining Journal* of last week. Instead of "but in the lower levels of the Van Mine (East), it appears that the direction *and dip* of the lode is south of east;" it should have read thus, "but in the lower levels of the Van Mine (East), it appears that the direction of the lode is south of east." The dip of the lode south is continuous from the surface, and varies from 1 in 3 to 1 in 2.

The following is an extract from the monthly report of the Van Mining Company, dated Nov. 20, 1872:—"The 60 fm. cross-cut north has been extended 6 fms. from shaft; set to six men for the next two months at 150s. per fathom; the lode has been cut to the full width, and well timbered, allowing ample room for tramways &c., to the cage." I gather from this that the Van shaft at the 60 fm. level is close to the lode. Bearing this in mind, and knowing that the surface of the Central Van shaft is 8 fms. lower than the surface of the Van shaft, and is no more than 7 fms. south of the east and west magnetic line when drawn through the Van shaft, it appears tolerably clear that the Central Van shaft should come upon the Van lode at a depth of from 45 to 60 fms. from the surface.

No one at all conversant with mining matters can go over the Central Van sett and not be struck with surprise at the fact that the Van Mining Company should have allowed it to get into other hands. The boundary line—lengthwise—between the two setts is about east and west; and from the present indications it appears almost inevitable that the Van lode must pass through the whole of the Central Van sett at no great depth from the surface; therefore, what in this may be the Central Van Company's gain will certainly be the Van Company's loss. If the two properties had been united the value of the Van Mine would have been immensely increased. By driving an adit level north, as is being driven north by the Central Van Company, and in continuing it into the Van sett—by making a communication between the present shafts of the two companies (the 45 fm. level in the Van Mine is now only 20 fms. from the Central Van shaft), and by sinking another shaft at the eastern boundary of the Central Van sett—I have no hesitation in saying that as one property the present returns of the Van Mine could easily be doubled, whilst the working expenses would not be increased in anything like the same ratio, and the mine thoroughly ventilated from end to end. Then the Van Mine would be the richest lead mine in the world, and would be as rich when the present generation has passed away.—*Jan.* 8. A. J.

## HOME AND FOREIGN INVESTMENTS.

SIR,—On reading the columns of your valuable Journal, and comparing the various items of information contained in them respecting property and stocks during the past year with that of preceding ones, it is impossible not to be struck at the persistency with which English capitalists continue to invest their moneys in foreign securities and enterprises, to the exclusion of those in their own country; and it is with the intention of showing how much more profitably they may do so at home in future, without incurring the risks necessarily attendant on speculations which from their position are beyond the actual supervision of those more nearly interested, that we address you this letter, in order that, being inserted in your widely circulated Journal, it may exert at least the influence of making those who, after balancing their books for the year, may have spare cash in hand to ponder well before laying out their savings. It must not be understood that in the above remarks we desire to depreciate the value of many sorts of foreign stocks to those who are satisfied with a comparatively small return for their money, though even they might find abundant occasions of placing it at the same rate, and in unexceptionable securities, in their own country, where they would have it, as it were, under their own eyes, but rather that we wish to encourage the development of home industry for home capital, and thus increase the home wealth, instead of sending the money abroad to enrich foreigners, who probably would not return the compliment later.

Further, we would desire to point out the difficulty of obtaining reliable information respecting the actual condition of undertakings at a distance, and of controlling the action of those entrusted with their conduct, and in this connection we would call attention to the disasters of the Taquaril shareholders, those of the Eclipse Mine, and the dangers from which the Erie bondholders have been saved by the spirited action of Mr. McHenry, as well as the losses of Venezuela bondholders, and the precarious position of those who have contributed towards the Honduras and San Domingo loans, as instances selected from a mass of others to show that without even the promise of wonderfully high returns the risks incurred are immeasurably greater than they would have been in higher paying investments in this country.

To illustrate our position, we will take a few from the great number of first-class mining properties, offering a certainty of great profit, with a minimum hazard of loss; and in choosing mines, we do so because no class of investment pays such large dividends, and from none has so much been gained, whilst in no other, whether it be banking, insurance, railways, financial, gas, or water companies, &c., has anything like a similar profit been made on the aggregate outlay as in mining; and thus, though disasters may have occurred in some few instances, they have been infinitely more than compensated for by the splendid results achieved in others.

We would also observe here that with modern scientific discoveries and mechanical appliances, as well as an increased knowledge of geology, the mishaps of the past are most unlikely to recur, or at best their results would be restricted; whilst on the principle of insurance, by spreading the amounts to be invested over two or three properties all risk of loss would be obviated under the present limited liability system. Thus, for the past, Lisburne has paid in dividends 137,400*l.*, upon a capital of 7500*l.*; East Darren, 60,450*l.* upon 9600*l.*; Cwm Erfin, 27,500*l.*, on 6500*l.*; the shares of Botallack which cost originally 91*l.*, sell now for 150*l.*; North Levant, 10*l.* 12s., for 17*l.*; and South Caradon, 1*l.* 5s. for 180*l.* But these results already attained though still being continued, belong rather to history than to the object of this letter, and have been adduced in support of the above arguments, our object being to demonstrate that what has been done may be done again, and that there are mines now before the public which present equally great promise for the future, as the following examples will show, and will, we trust, prove that our money can be as well, if not better, laid out within the limits of our own islands and with less risk than it can be abroad.

The Boscaswell Downs Tin and Copper Mines, situated in the same district as the famous Botallack, North Levant, and Levant, which have respectively returned very large profits, has already, under the Cost-book System, given a gain of over 156,000*l.* from the small portion of its vast mineral wealth which has up to the present time been worked, and that in the old-fashioned manner, whilst its immense lodes have as yet scarcely been touched, and offer a field of almost unexampled fertility to the enterprise of its present owners, notwithstanding the many long years during which it has unfailingly been a first-class dividend-payer. The future profits will further be greatly increased by the application of modern machinery in the place of the old Cornish engines, with their wasteful expenditure of fuel, and this has been already done to a certain extent by the substitution of two portable winding-engines, manufactured by Messrs. Robey of Lincoln, which alone effect a very considerable saving, consuming only about 1-6th of the quantity of coal required by their predecessors, and performing the work more satisfactorily. The present production is about 80 tons of tinstuff per day, which is the limit of the present crushing machinery, but so soon as the latter shall have been improved and enlarged this amount may be almost indefinitely increased, with, of course, increased dividends. The shares in the limited company which has purchased this valuable property, being only of 3*l.* each, are within the reach of most pockets, and offer a ready and sure means of investing small savings as they arise, thus preventing their being squandered whilst waiting for such an accumulation as would make them applicable in higher-priced investments.

The Denbighshire lead mines also present every feature indicative of great future success, being in the Mold district, and being close to the celebrated Maes-y-Safn Mines, and to the Jamaica, Mount Pleasant, Bryn Gwyn and Hendra Ucha Mines, all of which are, as is well known, good paying mines. They have also been most favourable reported on by Capts. Pryor, Francis, and Jones, gentlemen whose opinions in such matters are entitled to the highest consideration, and, no doubt, this property will prove a source of large and continuous income to those who are fortunate enough to become shareholders in it, an income likely to increase from the gradual rise in the price of lead, which has been steadily progressing for a considerable time past.

Wheal Whisper is another good and valuable property, possessing rich lodes of tin and copper, which, however, are for the moment difficult of access, from the unsafe condition in which the workings have been left by the old miners, who had burrowed after the ore, seeking an immediate profit, regardless of the future of the mine. It has, however, within a few months from the commencement of its new working paid a dividend from the metal recovered out of the waste, and cannot fail where such a valuable material was thought worthless of proving later a splendid concern.

A great deal might be said also about the Penstruthal, the Cardiganshire Old Bog Mine, and a variety of others, but we shall conclude this letter, which has attained proportions we never contemplated, by simply turning to one more specimen of another sort of property—coal—and mention the Clee Hill Collieries, Salop, which not only possess a splendid field of three different kinds of coal, but have also blackband ironstone on their estate, argillaceous ironstone, limestone, jewstone, and an inexhaustible supply of brick and fire-clay, all articles of recognised market value, as established by the reports of Messrs. Joshua Richardson and John Brunton, of the Institutute of Civil Engineers (the latter a most distinguished member of his profession). HARLAND AND CO.

*Gresham House, London, Jan.* 8.

## STANNARIES COURT DISESTABLISHMENT.

SIR,—The ventilation of this subject in the columns of the *Mining Journal* tends to confer a great benefit on the interest it so ably represents. That the time has arrived for a sweeping change in the Stannary Court is patent to all who have taken the trouble to deliberately study the subject. I will, however, go a step further, and assert that the all but general opinion is it should be done away with altogether; and I venture to add that, excepting those who directly or indirectly are interested in the supply of materials to the various adventures, there are but few indeed who would gird up their loins for a fight in its favour.

To attempt to cleanse this type of the Augean stable would be futile. Legislation in this instance must not be in patch-work; it must be sharp, short, and decisive, razing the grim obstruction to its foundation, and totally obliterating this adjudicative fungus from the tablet of the law.

Those usages and customs guaranteed by Royal Charter even before the reign of King John, and which subsequently led to the "convocations," or septennial meetings, of the tinners, then all-powerful in Cornwall and Devon, and right difficult to be ruled, as the chronicles tell, are ill-suited to the enterprise of the present period, a state of things obviously anticipated by the Government of William IV., when by the Acts 6 and 7, cap. 104, of that reign an innovation on the old charter took place by the abolition of the Stewards' courts, the consolidation of the four Stannaries, and the vesting of our common law jurisdiction in the hands of the Vice-Warden. Hence arose the general Stannaries Court for Cornwall, the adjudication of which was by the Act 18 Vic., cap. 32, passed in 1855, extended to Devonshire. Then came the Companies Act of 1862, wherein a clause, while securing to the Stannaries all their then existing privileges, authorises the registration of a cost-book company in the Stannary Court with limited liability.

From that time may be dated the abuses which now give an evil notoriety to that anomalous institution. With the old leaven of the ancient juridicate the imperfections of the new law combined, and henceforth the mining interest of both counties, up to the present moment, has been a sufferer. Inasmuch as the nefarious transactions (which, to be lenient, had their origin probably in incapability, but still bear their record "dark as Erebus" in the minds of the real friends of mining) that have marked time to the progress of proceedings in the Stannary Court are now culminated, not to mere implications, but downright accusations, to which the ear of the sapient and provident statesman can never be closed.

There is positively something ridiculous in the stolid routine that distinguishes the dignified perpetration of that legal dispensation practised in the Vice-Warden's antiquated court. The Judge of the hour sits with three or four officials, the Registrar being the chief officer and learned adviser. A case comes before the "Court," the "wisdom in the wig" suggests an opinion, the Registrar endorses it forthwith, the less eminent subordinates of course follow suit, professional advisers are few and far between, some profitable adjournments take place, and matters tumble into the archives of the Court according to their centre of gravity, the most weighty and important falling to the bottom of the sack, not to make their appearance for some time to come, and then most likely to be decided upon *exparte* evidence and argument, but all according to custom!! At the same time, all are mightily satisfied with their own performance. They enjoy it; but, as the wolf said when he saw a company of shepherds dining off a leg of mutton, what a row would they not make were they to catch others at such a banquet.

I remember at the moment an incident of the court-jurisdiction in a case where a shareholder held both in Wheal Grylls and Wheal Anna; a call was made in one, and that not having been met, the end of the suit merged into the Judge's decision that on the profits of the other mine the sum claimed should be levied. That was a settler, of course, but many narratives might be related of yet more fantastic tricks in that locality.

I sympathise with "A Sufferer," who appeared in print in last week's Journal. He is one of a disconsolate community, but I assure him he need not have reflected on Joseph's coat of many colours, or have chased Pharaoh's lean kine through the scriptural pastures, or have conjured up the veiled prophet from drawing-room romance and carpet poetry, in search for an allegory wherewith to assail his injurers. There is no occasion to lift a veil from the forensic doings he refers to. There never was one. The "cornuted front and cloven foot" of as vitiated a system as ever was permitted to approach the temple of justice, to the perversion of common sense, of common law, and the profanation of equity, are plain to be seen.

When Capt. Teague, who brings an independent mind, independent means, and, though last not least, pure principles to bear upon the abolition of the Stannary Court, who will take upon himself to deny the utmost confidence in his intelligence and experience?

The character of that court now points as its similitude to the grotesque gravity of the ape and the subtlety of the fox.

A MINING INVESTOR FOR TWENTY-FOUR YEARS.

## SOUTH FOWEY CONSOLS MINE.

SIR,—On my way into Cornwall I left the train at Par, for the purpose of visiting this mine, and was obligingly met at the station by Capt. Pucky, who kindly accompanied me over the sett. I could not but be struck at the extent of the "old workings" in bygone ages, which conclusively proved to my mind the existence of a large and, to the then workers, remunerative course of ore. Indeed, from the limited means at their command, it must have taken a very considerable period of time to have accomplished what they appear to have done, and for which, I doubt not, they must have been amply repaid, or they would not have continued to prosecute their works; and in this I am borne out by the very kindly heap of stones just raised from an old shaft, which is now being cleared up, and which shows very fair samples of tin. Now, as the old workings were not carried to a greater depth than 10 fms., and were then stopped by the water, which they had no means of drawing off, I would strongly urge on the shareholders the propriety of at once testing this part of the mine in several places simultaneously, in order to ascertain the real state of the case, as from the position of the mine, lying as it does between the once famous mines of Fowey Consols and Par Consols, we may reasonably conclude that it contains the same lodes that made them so rich. As I am not writing for the outside public, but only for my fellow-shareholders, I sign this with the number of my shares, that they may (if they think it worth their attention) ascertain my name from the cost-book.—*Truro, Jan.* 7. FORTY-FOUR.

## MINING PLURALITIES.

SIR,—The question is often asked by mining men—"How is it that in almost every mining district some one or two agents get nearly the whole of the appointments, and make a monopoly of situations?" Our great poet has said, "Some men are born great, others acquire greatness, and some have greatness thrust upon them." I do not quote this as an illustration of the natural causes which promote the majority of successful agents to authority and power; because, if we examine and apply the sentiment, we shall quickly learn that in most instances they are neither born great, and have not sufficient mental capacity to acquire greatness, therefore we conclude that greatness is thrust upon them. But for what reason? Aye! there is the rub. Is it because they have superior knowledge and mining ability, and are remarkable for veracity and honesty? Are they so far above their fellows in these essential qualities as to entitle them to preference and partiality? We trow not. Sometimes the prosperity of an agent arises from holding a situation in a mine which is rich—for nothing succeeds like success—and people are hasty to infer that because one mine is productive all other mines placed under his management will be equally so. But no idea can be more utterly fallacious and opposed to well ascertained facts. It is an anomalous condition of circumstances which reduces some clever and deserving agents to a state of comparative mendicancy and insufficient remuneration, and elevates other (perhaps) less deserving and clever agents to the position of wealth and competence. Let us cast about for a solution of this difficulty, and luckily we are not compelled to go far in search of evidence which will corroborate the following statement—that it is neither quantity of brain, success, or high reputation which is requisite to confer upon a man a lucrative appointment, or any number of such appointments. As I take it, these are a few of the pre-requisites which are sometimes necessary to ensure and guarantee success. An elastic conscience, unbounded assurance, a familiar and very intimate acquaintance with the telegraph office, a facility for writing reports which may be read either way, to the advantage or disadvantage of the mine, and a close connection with opulent and unscrupulous shareholders. If this answer is unsatisfactory and incomplete, I know of no other which will meet the difficulty.

There is another unaccountable fact connected with the career of some agents; and that is, that notwithstanding the failure of the mines over which they have had control their progress continues, and they remain unmolested by remarks of blame or censure, whereas other equally unfortunate agents lose their situation and reputation, and even experience difficulty in obtaining places for which they are eminently fitted, both by character and ability. We suppose it is the old, oft-repeated tale, that "kissing goes by favour" which makes such invidious and unfair distinctions. In this district we can point to a large number of mines, extending over a wide area, which have been under the management of one or two men. Almost without exception, the result of working these mines has been the expenditure of a large amount of capital and unprofitable operations. How is this? Let us suggest a cause. In the one case the shareholders have been exalted to the tiptoe of expectation by the bewitchment of a Scotch fiddle, and appeased during depression into a calm quietude by the dolorous drawling of an ambrodextrous psalm-singer. In the other case, by the injudicious and illegal use of the telegraph, and a repetition of shocks, the shareholders have become, like the victims of the electrical eel, benumbed and insensitive to the fluctuations in value which have been caused by the minions of jobbers acting under the advice and influence of shareholders in London and some of the provincial localities.

If any of your numerous correspondents are in possession of more accurate information they will oblige by correcting the statement of a well-meaning but misinformed writer, whose reputation will be well known when he subscribes himself—*Jan.* 7. RICHARD BARNACOTT.

## MINERAL HILL MINES—DEBENTURE HOLDERS.

SIR,—As the *Mining Journal* is much read by my fellow-debenture holders, I beg to ask of you the favour of inserting this, particularly so as I believe each person interested will see things in a different light to that which he hitherto has done. I begin by saying that from the first I have held on, and that believing the statements of Mr. John Taylor, of April 27, 1871, extracts of which I quote. He says:—"The property consists of 41 mines."....."In that short time (38 days) 814 tons yielded silver to the value of 30,000*l.*"....."At this date the piles of ore already extracted and awaiting treatment at the mill are of the value at least of 41,000*l.* In addition, I can safely place the value of the ore actually opened out to view and ready for extraction at upwards of 200,000*l.*"....."I would recommend that a mill, or mills, from 40 to 50 stamps, in addition to the one at present working, be erected," &c. &c. Again, we are told that without more stamps (the stamps for which is charged 32,000*l.*) the mines are making "profit per day 840*l.*"

Believing Messrs. Taylor were experienced and honourable men—believing that Messrs. Taylor were really (although named not as such) the vendors or owners of the mines, and that they desired more capital to properly and fully develope all the mines, which they purposed to raise by debentures, I became a debenture holder. From the accounts it seems that since the formation of the company we debenture holders, after paying 300,000*l.*, have received back some 25,000*l.* (for interest and principal), not the sixth part of that promised, and are told, for the first time, that we are only mortgagees nominally—"that we are shareholders really without the power to meddle with the management of the mines."

We are now told, or shown, that after the mines proved themselves next to worthless, the directors paid the vendors from the 300,000*l.*

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|---|---|
| furnished by us as part of the purchase money | £240,000 |
| Mill, &c. | 15,000 |
| Compensation for mill site | 2,800 |
| Estimated net value of ore on hand at commencement | 33,000 |
| As shareholders, a dividend of 3s. per share | 3,600 |
| Total | £294,400 |

Now, it seems to me that the vendors (the shareholders) have, through the directors, worked the mines during the past 18 or 20 months as they have seen fit; they have audited the accounts so as to apparently entitle them to divide amongst themselves (the last item shown) the dividend of 3s. per share, and now it seems they, the vendors of these mines, have the assurance to come forward (mind before 18 months have elapsed since issuing so boasting a prospectus) and tell us that by their management the mines are now next to worthless; that they wish us to let them (themselves) wind-up the mines through the Court of Chancery; in other words—1. To let the loss of their working the mines fall entirely on the debenture holders; 2. That the loss of the debenture holders shall be some 275,000*l.*, besides interest and the promised bonus; and 3. That they, the vendors, shall retain the 294,400*l.* already secured profit. Or they, the vendors, ask the Court to relieve them from paying the debenture holders—1. The sum borrowed by them; 2. The interest promised by them for the latter; and 3. The bonus agreed for or bargained for by them. Now, if the vendors (the shareholders of the Mineral Hill Mines) were to ask permission of the Court to release them, after refunding to the debenture holders all the moneys (say, 294,400*l.*) they have received, it would appear to me a far more reasonable and honest proceeding.

I will now attempt to show by the accounts as furnished to us—which differ from what we have been told, and what the prospectus sets forth—how the accounts are at variance with that which the vendors have said and now say. Kindly refer to balance-sheet dated Oct. 11, 1872:—The accounts show that from April 9 to Dec. 31, 1871, was sold bullion ore for 79,876*l.* 19s. 6d. (this per week is some 2102*l.*; mind we were promised *without* the expense of more stamps a profit of 840*l.* per day—*i.e.*, 5280*l.* per week). Now, if we look at the same item from Jan. 1 to June 30, 1872, we see there was sold 68,263*l.* 18s. 7d. (which is some 2625*l.* per week); in other words, the latter six months is 523*l.* better per week than the former six months. Thus I have shown that these mines at Dec. 31, 1871, made not a profit, as pretended, of 37,523*l.* 12s. 5d.; or, since December, 1871, these mines have made a much larger profit, of which we debenture holders know nothing. If so, where is the money? If I had taken another line of conduct I should have shown that the accounts set forth that at the commencement 41,000*l.* worth of ore belonged to the vendors, if so, instead of the mines making to Dec. 31, 1871, the profit of 37,523*l.* 12s. 5d., they were worked at the loss of 2476*l.* 7s. 7d.

From the words I have quoted you see we were guaranteed (without going to the expense of a new mill, which latter is charged 32,000*l.*) a profit per day of 840*l.*—*i.e.*, 5040*l.* per week; now, supposing the mineral raised or sold had been all profit, it would have fallen short of one-half that which is set forth by the vendors in the prospectus. This being so, was it not worse than wrong in the directors handing over to the vendors the first 240,000*l.*? Was it not the duty of the directors of the Mineral Hill Mines to have said to the debenture holders, "We have been most disagracefully taken in by the vendors; we are very sorry unintentionally to have so deceived you, but here is your money again?" And was it not the duty, prior to Dec. 31, 1871, of the directors to have said to the vendors, "You have grossly deceived us, for your mine instead of making a profit of 5040*l.* per week has only produced ore to the amount of—supposing the setting forth that 41,000*l.* worth of ore at surface at the commencement was all a mistake—2102*l.* per week (less the cost of mine and expenses), therefore we refuse this day to pay you for the mine, or have anything more to do with you."

If I have not been sufficiently explicit, I beg to say I have shown, on Messrs. Taylors' authority, 241,000*l.* worth of ores were seen on the mines in April, 1871, by Mr. Taylor, jun. Now, let us see how this tallies with the accounts. In the balance-sheet rendered, dated Oct. 11, the ores sold valued 79,876*l.* 19s. 6d., and 68,263*l.* 18s. 7d., together making 148,140*l.* 18s. 1d., which is 92,859*l.* 11s. 11d. short of that seen by Mr. Taylor in April, 1871, on the mines. Now, are we to suppose that from the latter day (April, 1871) to this time no discovery of ore has taken place to increase the amount of ore seen by Mr. Taylor in 1871? I will now attempt to show how the early accounts have been rendered to look pleasant, also attempt to show that the mines have made larger profits since December, 1871. If we look at No. 1 account (the account ending December, 1871) we see they take as an asset ore not realised, but valued at 42,000*l.*; again, if we look at No. 2 account (the account ending June, 1872) we see ore debited 42,000*l.*; that is like taking an imaginary sum out of one pocket and putting it into the other pocket. Am I not justified in saying this 42,000*l.* worth of ore never existed? It must be so, because I find that No. 2 account says another 68,263*l.* 18s. 7d. worth was sold, which cost to raise, &c., 40,254*l.* 9s. 2d.

Thus, it seems to me that to make one account look pleasant, 42,000*l.* worth of ore is credited; to make the next account look worse, 42,000*l.* is debited. I should much like this explained. To understand where I refer to last is in No. 2, under "Decrease of ore, Dec. 31, 1871, 42,000*l.*"!!!

In the way I now put the accounts it is plain that up to Dec. 31, 1871, the mines were worked at a loss. It is plain that from Dec. 31, 1871, to June 30, 1872, the mines instead of losing 1200*l.* 17s. 7d. made a profit of 17,302*l.* 2s. 5d. I candidly say that my impression from the accounts is that the mines in 1871 were far from being so rich as they were in June, 1872. I believe that the directors were not justified in paying the vendors of the mines in 1871. I believe the directors were not justified in paying the vendors (the shareholders) the dividend on supposed profits they did of 3600*l.* I believe if the old mill was equal to turning out a profit of 840*l.* per day, there was no necessity of at all erecting a new mill at the expense of 32,000*l.* I believe that if the latter was erected at all it should have been charged in the first account. I believe that if the vendors were entitled to be paid for "ore

value of stock of ore on hand at commencement, and for mill site," &c., 36,500*l.*, it should have been charged in the first balance-sheet ending December, 1871. I add, had this been so we, the so-called debenture holders, would have learned 12 months since the bad news we only lately have learned. A DEBENTURE HOLDER.

## THE PROGRESSIVE MINES.

SIR,—Permit me through the Journal to thank "Observer" for his able and detailed replies in the Supplement to the Journal of Dec. 20 to my queries. Being on the spot, "Observer" has many advantages for obtaining practical and positive information, and it is evident he makes good use of eyes and ears. As there has been no contradiction in the Journal of his statements concerning the 14 mines named, I have the more confidence in their correctness, and hope to reap some advantage from "Observer's" kindness." He will place me under further obligation to him by occasional contributions of further observations on a few of the mines in his list (say) New Rosewarne, New West Rosewarne, Polrose, Parbola, and New Hendra. I note that New Rosewarne shares have fallen from 11*l.* to 4*l.* within about six months; and if the agents' reports be at all reliable, they must be a very good investment at present price, with a firm and advancing tin market. Notwithstanding a want of harmony between the London secretary and the local management, which the shareholders may easily remedy. And in spite of a few trivial accidents and hindrances from exceptionally stormy weather Polrose is situate in a first-class district, and the particulars given by "Observer" are very satisfactory. There are many indications that we are on the eve of a new and prosperous era in Cornish mining; many foreign bubbles have burst, and are bursting, and capitalists are beginning to find out that they may go further from home than to Cornwall, and fare worse. Let "One and All" be the motto of secretaries and agents, shareholders and miners, and 1873 will bring benefit to all.

*Bishopsgate, London, Jan. 8.* ENQUIRER.

## SOUTH CARN BREA.

SIR,—Can any of your numerous correspondents inform me what is going on at this mine? Week after week I look in your columns, but am doomed to disappointment. Is it that the agents are so fully occupied that they cannot find time to send some account to the Journal how they are progressing? It is only right that some light should be given us who live out of the county. At present we are quite in the dark, and at the tender mercies of one or two benevolent sharedealers, whose principal aim is to rig the shares to suit their books. What I think is necessary, and ought to be proposed at the next meeting, is a London office of reference, so that outsiders like myself may have some glimmer of a chance of fair play.

ONE KEPT IN THE DARK.

## BRAZILIAN MINING COMPANIES.

SIR,—Can any of your readers explain the apathy which is shown with regard to the Brazilian mines? Is it that they no longer merit attention, or are the shareholders satisfied to wait until the proposition to wind-up voluntarily one or another is again submitted before demanding explanations from the men who are directing affairs here?

Take the Don Pedro as an instance; month after month advices of losses ranging from 1700*l.* to 1900*l.* have been coming home, and yet the last report sent to the shareholders states that the reserve fund is 9000*l.* What can this mean? If the reserve fund is intact, and no calls have been made for years, how have all the losses been met?

Anglo-Brazilian also. Is the "staggering" of the secretary at the very natural result of his own foolish interference to satisfy us for the loss of our money, or is an effort going to be made with the remaining capital to get something out of the new property?

Again, at Sao Vicente, what return do we see in the distance? Like the Anglo-Brazilian, the capital is melting away on the old property, while the new receives little or no attention, and post after post brings nothing but empty excuses from the managers, who rightly enough, are desirous to keep their positions.

So matters continue, and are likely to continue, until the shareholders interfere. What could have been more disastrous to our pockets than Taquaril and Eclipse? Both concerns emanated from Haymen and Co., and both are now winding-up. Is it likely the Anglo-Brazilian and Sao Vicente, if not Don Pedro too, will come to grief if some energetic measures are not soon taken by the shareholders? Why are investigations left till on the eve of bankruptcy? Surely the evil results of such a policy have been seen often enough.

The official who went out a short time since to inspect the various mines we have seen was peculiarly unfitted for the work, leaving his close connection with Haymen and Co. altogether out of the question. Why, then, not have the operations at the mines examined by a competent party, so that a faithful report may be placed in the hands of the shareholders and committee of investigation appointed?

*Liverpool, Jan. 6.* A SHAREHOLDER.

## THE NEW QUEBRADA COMPANY.

SIR,—Kindly permit me to say a few words to my fellow-shareholders. Last week I performed the disagreeable duty of attending the general meeting, and felt truly grateful to the directors for having postponed it so long. Cannot something be done to stop this continual turmoil? If not, is it really worth while to continue on at all. What recompense is there in the future to compensate for all this continual worrying? What is the real position of our company?

1.—We have many of us got to believe we have a very wonderful property (though really I know not on what grounds) but—

2.—Unless a railway of 60 miles can be constructed through a country of deadly climate this "wonderful" property is utterly worthless, although it has cost us—

3.—The large sum of about 320,000*l.* Money actually gone, and nothing to show for it. The most wonderful thing is that our shares are at their present price.

4.—Will the railway really be constructed? I think it is very doubtful, and the opposition party is doing its best to frustrate it. Then—

5.—Should the railway company be floated, how many years shall we have to wait before even a small dividend can be paid us?

I ask, therefore, looking at all these drawbacks, doubts, and difficulties, whether the company is worth all this agitation and worry? The first best step towards keeping the peace is in supporting the present directors; if, therefore, you feel any interest in your property, and mean to keep your shares, send your proxy in favour of our directors. Mr. Hemming has always been the paralysing influence the company has had to contend with; shake it off, if possible, once and for ever, or it will drag the company to death.

As for the Stock Exchange speculators, it is an outrage on common sense to suppose for one moment that they have gone into our shares as an investment. They have simply bought to sell, and the British public will be sure to be "let in" for their shares sooner or later. Look to America for the injury this class of men can do a company. They have a perfect right to buy and sell, but let them have no control in the management of English companies. The only one advantage I can see in their being elected is that they might get up a more fictitious price for our shares, and we might then get out at somewhat better prices; this, however, is very doubtful, but to be fair to these gentlemen I throw out the suggestion for what it is worth. We must remember there is a contract with the promoters of the railway company to have 7500 shares at 2*l.* odd, and at any moment they may be "called" and thrown upon the market, which we may be sure will happen whenever the price tempts and the market is strong enough. They would have been out before now had the market been strong enough to bear the operation. Support your present directors, and oblige— AN OLD SHAREHOLDER.

*Jan. 8.*

## NEW QUEBRADA COMPANY.

SIR,—As an independent shareholder of the New Quebrada Company, I was much impressed, at the meeting held on the 3d, with the way shareholders sometimes foolishly give their proxies. I am convinced that many of those who gave their proxies adverse to the direction, and who were in the room during the meeting, changed their views when they heard the very straightforward and satisfactory statements and explanations of the directors, and saw the miserable figure cut by their opponents, whose interested motives were only too apparent. Let each shareholder read the report of the meeting, and then judge for himself how far he has been misled by the specious statements of parties whose advent to power, however pleasing to themselves, would be most detrimental to the welfare of our company.

I write for my own pocket's sake, and urge my fellow-shareholders for theirs to support the directors, who have successfully brought matters almost to the desired point. I deprecate any interference with their action, as damaging to our prospects (I have reason for saying that might, at the present time, even be suicidal), and unhesitatingly I call on those who (possibly without due knowledge of the facts which I have been at the trouble to acquire) gave their proxies against the board to revoke the same. I may state that the directors were unknown to me, even by sight, previous to the meeting, and I address my fellow-shareholders in good faith.

*Jan. 9.* J. W. B.

## NEW QUEBRADA COMPANY.

SIR,—As much has been made of the fact of the directors of this company not having called the shareholders together for three half-years, I, for myself, considering the character of the meetings generally, and the frightful waste of time they cause, most sincerely thank the directors for not having called the meetings oftener, especially as they had nothing definite to report to us.

AN ORIGINAL SHAREHOLDER.

## AUSTRALIAN UNITED MINE.

SIR,—We notice a rise of 5*s.* in the quotation of this property during the past week, thus making the price 15*s.* per share. If the property is called 1*l.* per share we find the value of the mine to be 31,000*l.* Just twelve months since Australian United (Gold) stood at 3*l.* 5*s.* per share, or 65,000*l.* for the adventure. A comparison of this "investment" at the present time with the then condition, a year since, causes considerable surprise in the eyes of investors. Old shareholders can inform the "Enquirer" that they infinitely prefer their present prospects to those entertained last year. It is expected that Mr. Kitto will be able to obtain the adjoining property (near the Central Mine) by the next mail, which would at once greatly enhance—in fact, more than double—the value of this "investment," the terms being very advantageous for the shareholders. The shares of this company are being rapidly and quietly bought up, a great demand having existed for them during the past week. The unusual depression of this mine may justly be attributed to undue "stock jobbing operations." When these shares stand at par, or 20*s.*, it may justly be observed that the mass of the investing public will really become buyers. The cautious investors generally wait for a property to rise to a high figure ere they really believe in its merits. On the contrary, the wise "investor" buys when he clearly sees the best margin for profit. One or two considerations may be particularly noticed in this Australian mine—that it is not subject to the sudden strikes of miners, or the iniquitous rise in the price of coals, materials, and wages. Lastly, it is free from all those distressing fluctuations to which tin and copper mines are subject; for, the product being gold, there is no calculation to be made as to the value of the returned metal, by ever-changing markets. Further intelligence from the Antipodes is eagerly awaited. SHAREHOLDER.

## AUSTRALIAN UNITED MINE.

SIR,—About three years since I wrote you respecting the above mine, and the predictions of success contained in that letter would have long since been fulfilled but for the unfortunate monetary position of the company, and the draining of its resources to meet the heavy expenses of the quartz mine, to the great neglect of the alluvial mine (the Central). Since then the quartz mine has been disposed of, and the funds obtained have cleared off all the debts of the company, and enabled the directors to proceed with the development of the alluvial (Central) mine, which had been obliged to be stopped. Since it has been re-opened this mine has done wonders, and appears destined to become one of the mining prizes of 1873. My object in writing now is to call the shareholders' special attention to the value of their property. Let them carefully read over the reports of the last six months, and let them note each succeeding report. Having held their shares so long let them not now part with them at the present price when there is every probability, and that at a very early date, of their obtaining a much higher value. If three years since they readily obtained buyers at 3 to 3¼ per share, they are certainly worth that price now with the present good prospects.

A LARGE SHAREHOLDER.

## EMMA MINE.

SIR,—As no one appears to have calculated what this mine has really yielded, I will endeavour to do so. Some people make a calculation by taking off the sum paid by the vendors, but this ought not to be, as that sum went to pay dividends during the time of the cave, expenses of cave, also litigation, and other expenses, which the directors had no idea of when the company began, so that the suspending of the dividend for a month does not prove the mine to be of less value than held out, as it is entirely owing to causes quite unforeseen, and which may never happen again. If everything had gone on as was expected all the money paid by the vendors would yet have been on hand, and much more, as the two months when almost nothing was done was the best of the whole year; but instead of benefiting by this, as was expected, the company paid 30,000*l.* in dividends, besides expenses of the cave. From these facts it will be seen that the mine has really yielded more than 18 per cent., as 13 dividends were paid in 12 months; take two off for the cave, leaves 165,000*l.* for ten working months, or about 20 per cent., so that 30 per cent. must have been the result if things had gone as was expected, and, to every appearance, certain. How many concerns in this or any other country have made such returns as the Emma has done? And yet the shares are pressed down to panic prices, as if something were really wrong, which there is not. One month's dividend is only 6*s.* For this the shares have fallen 7*l.* Matters could not be worse, although the dividend had been suspended for two years instead of only one month.

To give an example of the thorough unreasonableness of the present panic, I may point out that the shares of St. John del Rey (19*l.* paid) are selling at 30*l.*; and, although Emma has actually returned 195,000*l.* to the shareholders, and prospects better than ever, the shares are at 4*l.* discount. I sincerely hope that shareholders will take advantage of the present very favourable opportunity of increasing their interest, and, if possible, thwarting those unscrupulous men called "bears," who have been the principal means of putting the price to what it now is; but if shareholders would only buy, and not sell, during "bear" attacks these men would very soon stop their little game, especially if delivery of shares were insisted on. No shareholders have been persecuted as we have been, so that it is the duty of all of us to do what we can to thwart these "bears." As to the absurd statements of some people (no doubt "bears"), that money had been borrowed to pay part of the dividends, it is not possible, being illegal; and the directors, men of the highest respetability, would never entertain such an idea for a moment.

*Jan. 9.* A DETERMINED SHAREHOLDER.

[For remainder of Original Correspondence see to-day's Journal.]

# Meetings of Public Companies.

## WEST SWANSEA COLLIERY COMPANY.

The first general meeting of shareholders was held at the company's offices, Bucklersbury, on Jan. 2,

Mr. JOSEPH RAMSDALE in the chair.

Mr. FREDERICK WARWICK (the secretary) read the notice convening the meeting, and the report of the directors was then submitted:—

The company took possession on Aug. 31 of the colliery, to which operations have been at first confined, and of the plant and machinery, receiving benefit of work done from June 15. Mr. David Thomas, of Pontypridd, has been appointed manager of the colliery and works, and under his management the work has been progressing favourably. He recommended the immediate sinking of a new pit, in order to thoroughly air the existing workings, and also to enable coal to be brought to surface from this pit as well as from the previous opening. It will be finished by the end of the present month. The coal is found to be of first-rate quality, free from any impurity. The present returns are being sold at the colliery at good prices. Offers have been made to take all the company can raise, and one contract has been accepted which will leave the company a profit of about 6*s.* per ton. An estimate of profits shows that, allowing for a get of only 40 or 50 tons per day, 540*l.* will be realised in the three months, equal to 25 per cent. per annum, but by the end of six months an output of at least 100 tons per day may be reckoned, and the net profit will be about 40 per cent. per annum, so that a dividend may be expected by June. The new works will cost about 2000*l.*, which the directors propose to raise by issuing 500 new shares. The directors consider it certain that there is plenty of coal in the property, and that the coal is of exceptionally good quality, and easily worked and brought to market. Mr. Thomas "has the greatest confidence in the undertaking, and feels confident that it will, even from the present seam alone, turn out a safe and profitable investment."

The report of Mr. David Thomas was very favourable. After describing the operations at the colliery he says—"From all I have seen and experienced I am most happy to inform the directors and shareholders generally that I have had no reason whatever to alter my opinion of the colliery, and that, notwithstanding the price of coal has of late been reduced, still I am confident it never will be to what it averaged within the last 30 years by 4*s.* to 5*s.* per ton, and, further, that when the pit is down and the engine erected on top with all necessary gearing for winding and pumping, and the tramway completed to railway siding as proposed, in six months from such time I would guarantee to open sufficient work to turn out 100 tons per day, and work same at the present selling price to a profit of at least 5*s.* per ton. I have, in concluding, much pleasure in assuring the shareholders generally that I have the greatest confidence in this undertaking, and feel confident it will turn out a profitable and safe investment; and, further, that my utmost exertions, skill, and ability will not be spared in accomplishing the same."

The CHAIRMAN having made a few observations on the prospects of the undertaking, the report was unanimously received and adopted, and it was further resolved—"That 500 shares be issued as proposed in the directors' report, and it was the expression of those present that the present shareholders would do well to take them up at once."

The proceedings terminated with the usual complimentary vote of thanks to the Chairman.

## NEW QUEBRADA COMPANY.

The ordinary general meeting of shareholders was held at the Cannon-street Hotel, on Jan. 3,—

Col. STRANGE, F.R.S. in the chair.

The SECRETARY read the notice calling the meeting.

The CHAIRMAN, in moving the reception and adoption of the report and accounts, said he could not forbear looking back to the period when they last met, and contrasting the feelings which then possessed the directors with the feelings with which they now came before the shareholders. At the time of the last meeting the directors were entrusted by the shareholders with one of the most difficult tasks ever put upon the shoulders of a board of directors. The company had been in existence at that time about nine years, and had never paid a dividend; and owing to misfortunes of one kind or another, and also to mistakes, the company had become in a most dilapidated condition. It had also become much discredited in public estimation, and, to use the language which he had heard used by a great financial magnate, "it was a company which stunk on the Stock Exchange." It was a company whose resources were exhausted, and whose troubles had put it in a position rendering it exceedingly difficult to replenish its coffers. The directors now again come before the shareholders, after a long interval of 18 months, in a position to state that they had succeeded in the task which they had undertaken. They had found capitalists, and a company had been formed; the capital had not yet been absolutely subscribed, but the directors looked upon it as perfectly certain that it would be subscribed, to construct a railway to the mines, and this had been done on terms and conditions which, looking back calmly upon the past, the directors considered were the very best which could have been obtained, and were infinitely better than at the outset they had expected. The directors now came before the shareholders somewhat prematurely, but they did so in obedience to the wishes of a great many shareholders, before their task was quite completed, in order to lay before the meeting the whole of the circumstances connected with what they had done. As he had just stated, the directors had not yet absolutely completed their task; but they had the most perfect hope and certainty that the arrangement referred to in the report would be carried out, and the directors were on the most amicable terms with everyone connected with the Bolivar Railway Company. The present meeting had not been called at an earlier date because, as the negociations were not concluded, the directors really could not call the shareholders together for any practical purpose. He wished to apologise to a great many shareholders for not having answered enquiries addressed to him in letters which he had received, but the fact was that the letters were so numerous, and the negociations varied so much from week to week, that it was impossible to give any definite information, and, therefore, after for some time answering the enquiries of shareholders he had at length arrived at the conclusion that it was better to discontinue altogether to do so. He thought it his duty to refer to some matters respecting which exception had been taken to the action of the board. One of these had reference to the non-registration of the company's title in Venezuela. In the worst aspect of this matter the result to the company was merely that of a little delay, but the fact was that this delay had been caused, not by the non-registration of the title, but from the fact of the Bolivar Company having insisted upon instituting a search into the local registers in order to satisfy themselves of the company's title. Perhaps it would have been as well if the Bolivar Company had determined on this earlier. That was their concern, and this board had had no control over it. Another matter with reference to which remarks had been made was the fact of the directors having issued additional shares, and he was quite sure this matter had not been understood by those who had complained. The board had been necessitated to undertake large financial negociations, and in order to their success they had to avail themselves of the aid of a financial agent. These gentlemen do not usually work gratuitously. We hear sometimes of as much as 50,000*l.* being paid for the launching of new companies. Ours was even a more difficult task, for our company had to be resuscitated, but we had paid no such price for the aid we had procured. He reminded shareholders that at the time when the arrangement was made the price of the shares was nominally about 10*s.*, and if a thousand of them had been thrown on the market together they would probably not have fetched 10*d.* But the difference between the price at which the shares had been issued in consideration of the financial aid procured and their par value—namely, 5*l.* per share—would be only 25,700*l.*, and if nothing more had been aimed at than the procuring of financial resources the price they had paid for putting the company on its legs was not a dear one. But there were other weighty considerations for the issue of these shares.

Mr. STOCKDALE, of Bolton, thought it needless for the Chairman to enter into these details. He wished them to confine themselves to the present, and not deal with the past, which the report fully explained.

The CHAIRMAN said he should be most happy to do so, he simply wished to show that the directors had not made a bad bargan in connection with the recent issue of shares. Before sitting down he wished to say that at the present time this company was in a most satisfactory position as regarded the Bolivar Railway Company. He, and his colleague, Mr. Learoyd, were members of the Bolivar Railway board, which was most admirably constituted, most of the members having, either directly or indirectly, been nominated by Messrs. Matheson and Co., who were on the most friendly terms with this (the Quebrada) company, and he was convinced that when the search to which he had alluded had been made the prospectus of the Bolivar Railway would be issued, the capital would be certainly subscribed, and the New Quebrada Company would be made a living company. He did not presume to say that the directors had not made any mistakes, but he was certainly convinced that a better arrangement could not have been made, and their only wish was to complete it. (Cheers.) In conclusion, the Chairman moved the reception and adoption of the report.

Mr. WEECH seconded the resolution, and, referring to remarks which had been made by persons outside, said there was no truth whatever in the rumour that there was a division of feeling and interests at the board of this company. There was nothing of the kind, for ever since two or three of the present board were appointed the directors had set to work to make this company a success, and in doing so they had worked harmoniously throughout. Everything which had been done had been done with the full consent of all the members of the board, and he believed, with the Chairman, that no better arrangement could be made for the company than had been made. The directors were very largely interested in the company, and had worked hard to bring the negociations with the Bolivar Railway Company to a successful issue, and he thought he might fairly congratulate the shareholders that those negociations had now been very nearly brought to a successful issue, and that in a very short time the Bolivar Railway would be completed, and then he believed the New Quebrada Company might fairly look forward to very great success. He hoped the shareholders would unanimously support the board, and determine that they should not be disturbed in the undertaking which they had commenced.

Mr. F. H. HEMMING moved a direct negative to the resolution of the Chairman, and at great length gave the reasons why he thought the report and accounts ought not to be adopted, contending that the shareholders had not been supplied with the information necessary to enable them to form an opinion of the position of the company. He thought the shareholders should have some information to show the position of the company during the latter part of last year. He himself had been to the office to examine the books, and he complained that there was scarcely any entries with respect to the expenditure, and none with respect to the shares which had been issued. Some of the shares were in a very curious position, in consequence of their not having been brought before the Stock Exchange. He complained that the directors had attempted to raise up a feeling against him, but even after the attempt he had received 159 proxies, representing 24,500 shares. He had also received other proxies which were too late to be used, and he had also received the withdrawal of some of the proxies which had been sent to the directors. He then referred to the negociations with the Bolivar Railway Company, and expressed his dissatisfaction with the way in which they had been conducted. He proceeded, amidst considerable interruptions and impatient exclamations, to read a letter which the directors had addressed to the Venezuelan Government containing complaints of his (Mr. Hemming's) proceedings in connection with this company, and after expressing his indignation at this step, he stated that he had received a letter in which the Venezuelan Government had expressed confidence in himself. If the shareholders thought it to elect him on the board he would do everything he could to assist in the arrangements now going on with the Bolivar Company.

Mr. KIMBER also went at some length into the reasons why he considered the report should not be adopted. He complained of the long interval of 18 months which had elapsed since the last meeting, and said that it was also illegal, as by the Act of Parliament two meetings of the company should be held every year. If terms had really been arrived at with the Bolivar Railway Company he thought the shareholders should have been made acquainted with what those terms were. He contended that the proper steps had not, in the first instance, been taken in connection with the registration of the company in Venezuela. He believed that in the recent issue of shares the provisions of the law had not been properly complied with, in which case *bona fide* holders would have to pay the whole amount of their shares up again in the event of the company going into liquidation. He referred to other details, and said that the shareholders did not possess sufficient information to enable them to pass the report.

Mr. STOCKDALE spoke in favour of the policy of the present board. He expressed his confidence in the manner in which they were now managing the company, and especially the way in which they had conducted the negociations with the Bolivar Company; and he strongly condemned the opposition which Mr. Hemming was continually offering to the board, contending that the opposition had greatly injured the company, and depreciated the value of the shares. He regarded the question now as one of confidence or no confidence.

Mr. T. G. TAYLOR, who spoke amidst considerable interruption, supported the motion of Mr. Hemming.

Mr. LEAROYD (one of the directors), replied to the speeches of Mr. Hemming and Mr. Kimber. With reference to the latter gentleman, he congratulated him on the fact that whereas 18 months ago he was stated to be a large holder of the company's shares, which he had purchased when they were at their minimum, he had succeeded in disposing of them when, as the result of the energy of the present board, they had attained their maximum, so that now the gentleman who had addressed them at such length was (like Mr. Taylor, who had also spoken) the holder of five only of the company's shares.

Mr. KIMBER (interrupting) said that five shares only stood in his own name.

Mr. LEAROYD said Mr. Kimber had attached importance to the fact that in some contingencies the Bolivar Company might be entitled, under the contract, to take the Quebrada Company's property entirely into their own hands. The shareholders, however, need be under no alarm with reference to this, for the contract merely provided that if the company failed to supply to the railway company the stipulated quantity of ore per annum, or to pay for its carriage as if it had been so supplied, then the Bolivar Company might take possession of the mines, and retain them so long—but so long only—as was necessary for recouping themselves the amount of the arrears, and as soon as by their own working of the mines the deficiency had been made up they were bound to restore the property in its entirety. He proceeded further to explain the alleged delay in the registration of the company's title. There had been no inadvertency or oversight here on the part of the directors. They had acted under the advice of a gentleman who was peculiarly conversant with the laws of foreign countries, and whose name would command universal respect, and he repeated that the non-registration of the company's conveyance had not been the cause of a single day's delay. For his part, he thought the Bolivar Company were perfectly justified in their determination to make an independent search of the Venezuelan records before inviting the subscriptions of 350,000*l.* of public money. With that view they had sent out an independent agent, but their own agent had gone out a fortnight before him to complete the registration of the title immediately, so that there might not be a day's delay resulting from that cause. With reference to Mr. Hemming's complaint that the board had written direct to the Venezuelan Government with reference to himself, he (the speaker, thought Mr. Hemming might have been more ingenuous. He had complained that the directors had not only written such a letter, but had printed it, and had it translated into Spanish, but he had not been frank enough to tell the meeting that the letter which the directors had written was necessitated by one from Mr. Hemming to the board, which had been printed, and which contained in both English and Spanish, an extract from a letter from a member of the Venezuela Government to him (Mr. Hemming), and which was evidently a reply to a letter of complaint against this board, which Mr. Hemming had suppressed. Hereupon the directors felt that their only right course was to address themselves direct to the Government, explain their plans and purposes, and remove the erroneous impressions which had evidently been produced by Mr. Hemming. Mr. Hemming had stated that he (Mr. Learoyd) had suggested him (Mr. Hemming) as a proper medium of communication between the board and Messrs. Matheson and Co., but Mr. Hemming had forgotten to say that this suggestion was made by Mr. Hemming himself, and that he had written a letter to Messrs. Matheson and Co., and received a reply to it, which reply, probably, Mr. Hemming would show to the meeting. Mr. Hemming had also stated that he (Mr. Learoy) had offered to propose him as a member of the board, but he had forgotten to state that Mr. Learoyd had advised him to cease his agitation, and give evidence of the sincerity of his expressed interest in the company's projects, and had promised that if he would do that he (Mr. Learoyd) would after a reasonable time had elapsed be the first to propose that he should be added to the board. Unfortunately, however, Mr. Hemmings's agitation had been incessant, and the only condition, therefore, upon which he (the speaker) could have welcomed Mr. Hemming to the board had never been fulfilled.

Mr. FIELD (of the firm of Field, Good, and Haines) made some remarks as to the issue of B shares, and said he would defer the more general observations he had to make until those enquiries had been answered.

Mr. LEAROYD replied to those enquiries.

Mr. FIELD then said that he had come to the meeting with the view of supporting Mr. Elers, but that after what he had heard he was very strongly impressed with the undesirableness of making any material changes in the constitution of the board, and he urged the shareholders to give the directors their support.

Mr. ELERS rose to speak amidst loud cries of "Vote, vote."

The CHAIRMAN begged the meeting to hear Mr. Elers. He was one of the gentlemen nominated by Mr. Hemming as a new director, and it was desirable, therefore, that they should hear him.

Mr. ELERS protested, with much vehemence and gesticulation, against his being called a speculator in the company's shares. He enquired whether a man had not a right to do what he liked with his own?

A SHAREHOLDER enquired whether it was true that Mr. Elers had issued the prospectus of the Bolivar Company which he (the speaker) held in his hand; whether that had not been done for merely stock jobbing purposes; whether Messrs. Matheson and Co. had not written to him demanding to know whether he was the author of it; and whether Mr. Elers would produce the reply to that letter, and would inform the meeting how he became possessed of those prospectuses?

Mr. HEMMING: "Don't, don't."

Mr. ELERS replied that he should not answer impertinent questions.

The CHAIRMAN then proceeded to put the resolution for the adoption of the report and accounts, which was carried, on a show of hands, by a very large majority.

Mr. KIMBER denounced the Chairman's decision as monstrous.——The CHAIRMAN: That no mistake may be made, I will ask for the show of hands again, and request Mr. Kimber to count.——Again the show of hands was taken with a like result.——The CHAIRMAN: Now, Mr. Kimber, are you satisfied?——Mr. KIMBER said the resolution was no doubt carried.

Mr. LEAROYD then rose to propose the re-election of Col. Strange as the Chairman of the company. He believed it would be impossible for any gentleman to be found who was in every way so competent to discharge the duties of the office, or who would make so large a sacrifice of time and labour as Col. Strange had done.——A SHAREHOLDER seconded the motion.

Mr. HEMMING moved, as an amendment, the election of Mr. Elers.——This was negatived, and the motion for the re-election of Col. Strange carried by a large majority.——Col. STRANGE moved, and a SHAREHOLDER seconded, the re-election of Mr. James Thompson; to which Mr. ELERS proposed, as an amendment, the

election of Mr. Hemming.——Mr. Hemming's election was negatived, and Mr. Thompson's re-election carried.

Col. STRANGE proposed the re-election of Mr. Learoyd, stating that his labours had been incessant and invaluable.——Mr. BOWYER seconded this in highly complimentary terms, saying he had never heard a more able or business-like speech than that Mr. Learoyd had just made.

The election of Mr. Mathews was proposed as an amendment, but this was also negatived, and the re-election of Mr. Learoyd carried by a large majority.

Mr. Hemming's nominations being now exhausted, the other two retiring directors were re-elected without opposition.

Mr. LEAROYD then rose to make a suggestion. Personally he was very anxious to retire from the board, and nothing but a determined sense of duty would have induced him to continue on it as long as he had done, but he regarded it as of the most momentous importance that the pending negociations should be concluded, and that Col. Strange's connection with the board should not be interfered with. Col. Strange was the connecting link between this company and the Bolivar Company, and he should regard it as an incalculable disaster that that connecting link should be broken. He suggested, by way of compromise, that Mr. Matthews, one of Mr. Hemming's nominees, should now be added to the board. It would become necessary for one of the directors of the Bolivar board to be added to this, but there would be no difficulty on this point, for not only he (Mr. Learoyd) but other members of the present board were anxious to retire, and would do so at any moment, in order to procure the election of other gentlemen, who would contribute to the peace of the company and the efficiency of the board.

Several shareholders protested against the retirement of any of the directors, and considered it unnecessary, as vacancies already existed; and one of the shareholders proposed that Mr. Mathews should now be elected and added to the board.

This being seconded by a shareholder, and supported by the directors, Mr. Mathews was elected unanimously.

Mr. HEMMING declared that Mr. Mathews would not consent to sit elected in that way, and a poll was demanded, as well upon the resolution adopting the report as upon those negativing the election of Mr. Elers and Mr. Hemming.

After some conversation the CHAIRMAN fixed Thursday, July 23, for taking the poll, and adjourned this meeting to the following day (Friday, July 24), the poll to be taken at the company's offices, 80, Lombard-street, from 10 to 4 o'clock, and the adjourned meeting to be held at 12 o'clock on the following day.

A unanimous vote of thanks to the Chairman concluded the proceedings, which lasted about four hours.

## WESTERN ANDES MINING COMPANY.

An extraordinary general meeting of shareholders was held on Wednesday, at the Cannon-street Hotel, for the purpose of appointing a special agent to proceed to the mines under contract to be sold to the company, situated in the State of Cauca, on the Spanish Main, and to verify the vendors' representations contained in the prospectus, and if found correct to take possession of the property on behalf of the company.

The directors considered that the agent should possess certain special qualifications—that he should understand the Spanish language, be a good accountant, and also be a man of experience and integrity. Mr. Thomas Robertson had been recommended by several leading firms in the City of London as possessing the necessary qualifications, and a resolution was unanimously passed to sanction his appointment as special agent of the company, for the purposes named in the prospectus.

A SHAREHOLDER having enquired how many shares had been applied for, and whether in the event of the vendors' representations not being verified the 10s. per share deposit would be returned in full?—The CHAIRMAN replied that the whole of the 7000 shares offered for subscription had been applied for, and that in the event of the vendors' representations not being fully verified the subscribers would receive back their deposit intact.

The appointment of the trustees was adjourned to a day to be named by the directors for another meeting of the shareholders.

A vote of thanks to the Chairman terminated the proceedings.

## MINERAL HILL SILVER MINES COMPANY.

A special general meeting of shareholders was held at the City Terminus Hotel, on Thursday,—Mr. JOHN TAYLOR in the chair.

The CHAIRMAN expressed great regret that the directors had been compelled to again call the shareholders together to be present at this formal meeting, but it appeared the notice convening the last meeting was not sufficiently exact to make it perfectly legal. Under the direction of the legal officers this meeting had been convened, and to submit the following resolutions:—

"That it has been proved to the satisfaction of the company that it cannot, by reason of its liabilities, continue its business, and that it is advisable to wind-up the same, and that the same be and is hereby wound-up; and that Mr. Turquand (Turquand, Youngs, and Co.), be appointed voluntary liquidator."

The CHAIRMAN moved the above resolutions, and Mr. T. HAMILTON seconded them.

The CHAIRMAN, in reply to a question, stated that it had been thought they would have been able to meet the debenture interest due on Jan. 1, but being unable to do so the company must be wound-up.

Mr. Commissary-General GARDNER thought the debenture-holders should have been present, as they were the persons who held the greatest stake in the company. It appeared the interest of the bondholders would be best consulted by appointing as liquidator someone who knew everything connected with the company from its inception, and that he should be assisted by a committee of bondholders chosen from those who had the largest stake in the company, who might advise and control the liquidator as to the length of time the works should be carried on, and decide finally on the winding-up. That would be best effected by appointing the secretary as liquidator.

The CHAIRMAN, with all due respect for the hon. proprietor, was afraid his suggestion could have no legal effect. There was no other course open to the directors than that now proposed. Two petitions had been filed to wind-up the company compulsorily. The directors were convinced it was their duty to place the concern into voluntary liquidation, and by doing so they believed the interests of the bondholders would be best protected.

The resolutions were then put and carried unanimously.

A vote of thanks to the Chairman terminated the proceedings.

## DUN MOUNTAIN COPPER MINING COMPANY.

A general meeting of shareholders was held on Jan. 3, at the London Tavern, for the purpose of supplying the vacancy in the office of liquidators of the company, occasioned by the death of Mr. Arnold Rogers.

Mr. HENRY HYDE, in the absence of Mr. D. Sclanders (surviving liquidator of the company), was elected to the chair.

The SECRETARY (Mr. Thornthwaite) read the notice convening the meeting, and the minutes of the last meeting, which were then confirmed.

The CHAIRMAN expressed his readiness to hear any proposal from any gentleman present.——A SHAREHOLDER suggested that the proprietary should be informed as to what had been done towards winding-up the affairs of the company since the last meeting.——Mr. THORNTHWAITE said that he had seen Mr. Sclanders the night before, and had found he was very unwell; his non-appearance, therefore, that day was certainly and only to be accounted for by a restriction being placed upon his movements by his doctor. Fearing that, which had undoubtedly occurred, might take place, he (Mr. Sclanders) had jotted down some remarks he desired to lay before the present meeting, and which the Secretary then proceeded to read, as follows:—"It will be remembered that certain resolutions were passed at an extraordinary general meeting of the shareholders of the Dun Mountain Copper Mining Company (Limited), held pursuant to notice at the London Tavern, on Wednesday, Feb. 28, 1866, and confirmed at another extraordinary general meeting, held for that purpose, pursuant to notice, at the London Tavern, on Wednesday, March 21, 1866. These resolutions were—That this company be voluntarily wound-up under the provisions of the Joint-Stock Companies Act, and that a liquidator or liquidators be appointed; and that Messrs. Arnold Rogers and David Sclanders be appointed liquidators. At this time it was well known to the shareholders that there was but little to be done but to realise the property in the best way possible, and that the expected proceeds were unlikely to do more than pay a small percentage to the company's creditors, unless the examination on the company's property in New Zealand, then in progress, should develope further resources, or the requirement of the colony should necessitate the acquisition of the company's property. Your liquidators soon saw that there was no hope of any early sale of the property, for New Zealand affairs were in a state of great depression, and it was scarcely possible to sell property of any description. Even properties that had been regarded as most eligible for business purposes could not be realised, although the owners were willing to submit to almost ruinous sacrifices. As this state of things appeared likely to last for a considerable time, the agents in Nelson were instructed to endeavour, if possible, to keep the property in a constant state of repair, by utilising the timber and stone which could be obtained from the mountain, and brought down by the railway for sale in the town; and arrangements were made with Mr. Cock, the manager sent out by the company, to remain for a time to keep the railway and the rest of the property in working order, as well as to investigate and report on any mineral that might be discovered on the property. This state of things continued until a general meeting of the company, including the creditors, was called on April 27, 1869, the minutes of which meeting have been read. To carry out as far as possible the wishes expressed, endeavours were made to form a new company, and after much attention on the part of several gentlemen interested in the company a prospectus was prepared, and sent to all the members of the company with the sanction of the liquidators. Three hundred and ten prospectuses, with printed forms to be filled up, stating if the proposals were approved or not, and what, if any, assistance could be relied upon, were sent to the members and creditors of the company. Of this number, 29 were returned without any remarks, 3 not found or dead, 13 with letters for explanation, 7 declining altogether, 1 approval, 1 would sell or take shares in exchange for some or all, and 247 sent no reply whatever. It was obvious from such a result that a new company had no chance of success, and the attempt to form the same was obliged to be abandoned. As the manager, Mr. Cock, from the returns of the company's omnibus and wood and stone business, was enabled to keep the whole property in proper condition without a loss—in fact, for some three or four years, at a small profit, the liquidators were able to wait for better times; however, lately the expenditure increased, and there was a difficulty in making both ends meet, and as there appeared some probability of a demand arising for the railway about twelve months since it was extensively advertised in the New Zealand and New South Wales newspapers that if not sold previously the whole property would be put up to public auction on May 15. The result of the auction and the opinion of the agents in Nelson will be, perhaps, best conveyed by reading their letter of June 1 last. The letter, which was then read, from Messrs. Morrison, Sclanders, and Co., and addressed to Mr. D. Sclanders, was to the following effect:—"On May 15 the whole of the Dun Mountain Company's property was sold, by public auction, for 4750*l.* They feel assured from all that has transpired during their endeavours to effect a sale, both by private contract and public auction, that the sum paid was the best price obtainable. The solicitors of the purchaser are now engaged in looking over the deeds, and they hope by the San Francisco mail to forward the necessary documents, so that the liquidators may be able to send out with the least possible delay a proper conveyance of the land. In the meantime, 3750*l.* of the purchase-money has been paid, leaving a balance of 1000*l.* to be paid as soon as the conveyance comes to hand; but, as the purchaser wishes to operate at once with the property, they are now stipulating that the 1000*l.* should at once be deposited in one of the banks. All the company's men had been paid off, and notice has been given to Capt. Cock that the company would not require his services after July 10, 1872. He also agrees in thinking that the best possible price has been obtained for the property." On the conclusion of the letter, the SECRETARY resumed the reading of Mr. Sclanders' notes, as follows:—"The lawyers say that the title must be given by two liquidators, hence the necessity of the present meeting, and although this is the only business of the meeting it has been thought well to embrace the opportunity of explaining what has been done—(Hear)—thinking it may not be altogether without interest to some of the shareholders, especially those of them who are also bondholders. The remaining duties of the liquidators will be to complete the title, send it out to New Zealand, to receive the purchase-money, and to distribute it in such a manner as they may be advised. The 1000*l.*, waiting the production of the conveyance, is deposited in the joint names of our agents and the purchaser, at one of the local banks, for which 2½ per cent. interest only is allowed. The agents before closing accounts had some few to collect for firewood, &c., and intended to forward final statements with remittance, and, consequently, the 375*l.* was also placed on deposit; however, that sum has been directed home, and there is no doubt but it is on its way, and will probably arrive by next mail."

After a slight discussion as to the appointment of liquidator, in the course of which Mr. THORNTHWAITE said that he had been desired by Mr. Sclanders to express his wish that the meeting should elect Mr. Henry Hyde to that office, not only on the ground that urbanity and kindness deserved every respect and recognition from the proprietary, but also from the fact that he was the executor of the late Mr. Arnold Rogers.

Mr. RUTHERFORD then moved, and Mr. HILTON seconded—"That Mr. H. Hyde be appointed to fill the vacancy in the office of liquidators of the company, occasioned by the death of Mr. Arnold Rogers." The resolution on being put was carried unanimously.

A vote of thanks to the Chairman terminated the proceedings.

## WEST ESGAIR LLE MINING COMPANY.

An extraordinary general meeting of shareholders was held at the offices, on Tuesday, for the purpose of receiving the report of the directors, and considering the recommendation therein contained, that the share capital of the company be increased.

Capt. HAMILTON in the chair.

Mr. W. J. LAVINGTON (the secretary) read the notice convening the meeting,

The report of the directors stated that the company was formed with a capital of 12,000*l.*, in 6000 shares of 2*l.* each. It was intended at the time to work the western mine only, and had this design been adhered to the capital, although small, would have been ample for all purposes. The indications, however, at the eastern mine were of such a favourable nature that the directors, despite the smallness of the means at their command, clearly saw the advisability of carrying on the works at this point. The result has answered their most sanguine expectations. The company is now in possession of two distinct mines, situated about one-third of a mile apart, with a separate set of machinery on each, and capable of producing minerals in large and increasing quantities, from which the shareholders may confidently expect a remuneration for their outlay. To reap, however, the full benefit of these discoveries it will be necessary to erect more extensive dressing machinery and appliances, and to lay out larger dressing-floors, upon the latest improved principle, by which ore to any amount can be sent to market. The quantity discovered in the mine is practically inexhaustible.

To carry out this work in the most expeditious manner, and with a view of bringing the mines speedily into a dividend state, the directors propose to raise additional capital by the issue of 4000 shares, at 2*l.* each; 3000 shares to be for immediate issue, and 1000 to be held in reserve. The 3000 shares will be offered *pro rata* in the first instance to the present shareholders, and to be paid for in instalments, ranging over six months. In view of the shareholders not applying for the whole of this issue, the directors have entered into arrangements for the disposal at par to responsible parties of all shares not taken up. Thus the new capital is assured, and the company will be placed upon a sound basis, both as to its works and its finance. In conclusion, the directors have strong reasons for congratulating the shareholders on the excellent condition to which the machinery and work throughout the mines have been brought, as well as the improved prospects both mines present for permanency and increased productiveness.

The report of the manager (Capt. Harvey) stated, with regard to the eastern mine, that he considers the different points of operation in this mine are looking exceedingly encouraging for its fortunate possessors. As he has repeatedly stated, it is a mere matter of time to develope and open on the different points before they commence to make handsome returns. The whole of the newly-erected machinery is in good condition, and working well, the crusher gives great satisfaction, and they have nearly the whole of the surface works completed. Referring to the western mine, he stated that "if the machinery proposed were erected, and the winze communicated with the 37, we could sell regularly large paying quantities of ore, as we have, in a manner of speaking, an unlimited supply of mineral already in sight. I intend sampling 30 tons of ore from here this week, and after the whole is cleared for market I would advise to suspend dressing operations until something is definitely settled respecting the new machinery. In conclusion, I may add that I consider we are opening up one of the finest mines in the country, and would strongly urge carrying into execution the different work herein proposed without the least delay."

The CHAIRMAN said that hitherto their meetings had been held on the mines, the directors considering it a very desirable thing indeed, inasmuch as it afforded shareholders an opportunity of seeing their property and forming an opinion for themselves as to its value or otherwise. He had visited the mine upon two or three occasions and had come among them perfectly satisfied that they possessed a property of considerable mineral value. His brother directors and himself took every possible opportunity of visiting the mine, and were fully confident that it was one of the finest mines in the county of Cardigan. When the company was started it possessed only the western mine, where there was a lode of blende nearly 50 feet wide, and opened upon to an extent that, if provided with a sufficiently powerful water-wheel, and the other necessary appliances, something like 200 tons could be returned per month, at a profit of 2*l.* per ton. This mine was in an elevated position, but as the lode traversed the entire extent of the company's property they were advised to strike it as nearly as possible midway between the eastern and western boundary, which had been successfully accomplished by means of an adit driven into the hill, which had cut the lode about 14 fms. from surface, composed of very fine copper and lead, and 10 or 12 ft. wide. The shaft had been sunk 10 fms. below the adit, where the lode was impregnated throughout with copper and lead, and was no doubt a very valuable one, the more especially as it was gradually increasing in size, and improving in richness. At the 10 they were driving east and west, and the shaft was being sunk for the 20 fm. level, so that already they had 24 fms. of reserves, and by the time the 20 fm. level shall have been driven the captain would tell them with confidence and truth that the sales of ore would be regular and, he hoped, large. He (the Chairman) had very little doubt by that time the mine would be in a paying condition. The capital with which the company was started was very small, and the shareholders had now an eastern and western mine, both having proved to be valuable properties, hence the necessity, or, at least, the advisability, of raising further capital to the extent of 8000*l.* It was, however, proposed to issue only 3000 shares at present, and to offer them in the first instance *pro rata* to the shareholders, at par, believing that if capital had been expended the mine would be in a dividend-paying state. But to bring the western mine into a remunerative condition necessitated the immediate outlay of 1000*l.* for machinery, the present water-wheel being of insufficient power, and the dressing appliances ineffective. There was no doubt, by the assistance of this additional capital the mine would be brought into a permanently paying condition. He then proposed that the report of the directors be received and adopted.

Mr. F. A. TOYNE seconded the proposition.

Mr. MATTHEW GREENE had visited the mine, and bore testimony to the correctness of the remarks of the Chairman as to its encouraging prospects. The machinery on the western mine was totally unequal to immediate requirements, and there was no doubt that by means of a more powerful water-wheel and improved dressing appliances profitable returns could be at once made. The eastern mine was amply provided with all necessary machinery.

Captain HARVEY, the manager, stated that the eastern mine was started about 18 months ago, since when machinery had been erected, the shaft sunk 10 fathoms below adit, and the level driven about 20 fms. east and west on the course of the lode, and the stuff now at surface would well pay to be sent to market. They had not made sales from the eastern mine, but crushing was commenced to-day, and at the western mine regular and large monthly samplings would be made as soon as the machinery shall have been erected. It would take six months to erect the machinery, and three months after that he believed they would be able to declare a dividend. With blende at the present price there would be a profit of about 2*l.* per ton.

Mr. G. LAVINGTON had visited the mine several times, accompanied by some of our eminent practical authorities, all of whom expressed one individual opinion—that West Esgair Lle possessed every element of a great mine, and required development only to make it highly remunerative. The ore in the western mine was practically inexhaustible, but capital was required to provide machinery to enable them to bring their produce into a merchantable condition. It was not too much to say that the discovery in the eastern mine was the most important made in that part of the county for many years. This mine was provided with as fine a lode as any mine could wish to see, and, as crushing was commenced to-day, regular sales would henceforth be made. The lode was not merely 2 or 3 but 20 ft. wide, so that any quantity of stuff could be taken away that their machinery was capable of crushing.

Mr. BAMBURY expressed his satisfaction at the facts elicited, and had no doubt each shareholder would subscribe for his proportion of the additional capital.

Mr. GRAHAM had visited the mine, and from all the information he had been able to collect had no doubt it would at no distant date prove a very successful and rich property.

Mr. G. LAVINGTON mentioned that west of the engine-shaft they had an extent of ground of something like half a-mile up to the western boundary; and there was the same prospect of having a similar amount of wealth opened out on the south lode. By this additional 8000*l.* he calculated the executive would be able to prove the extent of the value of the property, which it should be recollected possessed the champion lode of the country, which had yielded millions of pounds' worth of ore in different mines. They had a mile of it in their sett, and at the eastern extremity he had himself broken some fine stones of lead, and he believed that eventually one vast mine would be opened out from one end of the property to the other.

The motion adopting the report and balance-sheet was put and carried unanimously.

It was then resolved "that the report of the directors be received and adopted." "That the capital of the company be increased by the issue of 4000 shares of 2*l.* each, to be issued to the shareholders *pro rata* on the condition of their respectively accepting the same within 14 days from the confirmation of such resolution, and that such shares be payable as follows—10*s.* on application, 10*s.* on allotment, 10*s.* on April 1, 1873, and 10*s.* on July 1, 1873." "That the directors be, and they are hereby empowered, upon the expiration of such 14 days to dispose of and deal with all shares not taken up by the shareholders upon such terms as they in their discretion may think fit, but at not less than par."

The CHAIRMAN said that if the 3000 shares should not be taken up by the present shareholders the capital had been guaranteed by responsible parties.

A cordial vote of thanks was passed to the Chairman and directors for the satisfactory manner in which they continued to conduct the company's affairs. A vote of thanks to the manager was also passed. The proceedings then terminated.

## GREAT NORTH LAXEY MINING COMPANY.

An extraordinary general meeting was held at the office, Austinfriars, on Wednesday, to receive a report on the mine by Capt. Wm. Kitto, of the Foxdale Mines; to consider and decide on the course to be adopted, and, if deemed advisable, to pass resolutions for winding-up the company, and appointing a liquidator or liquidators, with or without special powers and instructions as to the disposal of the property, Mr. BULLER in the chair.

The London manager and secretary read the notice convening the meeting.

The report of Capt. W. Kitto (of the Foxdale Mines) is as follows:—

*Dec.* 10, 1872.—In accordance with your request, I have carefully inspected your mines, and now beg to hand you the following as my report:—I need not describe the geological position of the property, as it is well known to you that it adjoins the Great Laxey Mines, and on the same line. I need not either attempt to describe the past history of the mine, as that is also well known to you; suffice it to say that it is now upwards of 11 years since I first visited the mine, and during that time I have repeatedly watched the various changes as they have taken place in the partial development the lodes have received, and having an intimate acquaintence with the adjoining property—Great Laxey—my attention on this visit has been more especially directed to the mutual relation of the two, so as to compare notes, and thereby see whether, in my opinion, the chances of success at the Great North Laxey are favourable or otherwise. As I have before stated, I have watched the various changes for over 11 years, and my anxiety has always been to see the lode partake more the character of the Great Laxey, not only in productiveness, but to show a more masterly and decided course, and this I assure you now appears to be taking place throughout the 110 fm. level; although at this particular point the lode is no more productive of lead than in the two next levels above—96 and 84—yet I have seldom, if ever, seen a more decided change, it now being a fine open masterly lode, showing good blotches of lead, blende, and copper ores, as much like the lode in the adjoining mines as two things can be, and I feel perfectly persuaded that, with proper development, the Great North Laxey will yet prove a great and profitable mine. The north engine-shaft is now down to the 121 fathom level, and some 6 or 8 feet driven out from the bottom, and there it now stands with ore in each end. The 110, 96, and 84 fm. levels are each driven about 18 fathoms north from the north engine-shaft, and at present suspended. The stopes here being in advance of the forebreasts. The south engine-shaft is down to the 110 fm. level, and a few fathoms only driven south from it, which is poor. The 60 fm. level is driven south from the south shaft about 105 fathoms, and has a very promising lode in the end, but the driving is also suspended. The adit has been driven some 60 fathoms into the north ground, and laid open a very promising lode for future development: such then is the present position of your mines. Now in order to secure success, you must prosecute the works with greater vigour, and to do this capital must be provided, for it is useless to starve or rob the mine as at present. A much greater extent of lode must be laid open. The north engine-shaft should be furnished with the necessary pitwork and sunk with all possible force. The 121 fm. level ends north and south should be driven with not less than six men in each. The stopes in roof of 110 fm. level north should certainly for the present be discontinued, and the forebreast prosecuted with six men. The same remark will apply to the 96, or level above. I should also like to see a small force in the 110 fm. level end south, but I would strongly advise you not to neglect the 60 south, as I consider this one of the most interesting pieces of mineral ground in the Isle of Man. The lodes, in my opinion, should be further proved by cross-cuts, and other trials now being made, thoroughly carried out. The machinery appears in good working condition, and quite ample for all requirements. In conclusion, I would again state that if the mines are prosecuted in the manner I have described, I fully believe that in Great North Laxey you possess a valuable property, and no very long time will be required to prove the accuracy of my statements.

The CHAIRMAN said that since the last meeting the directors had obtained the report of Capt. Wm. Kitto, of the Foxdale Mine, who had known the mine and the neighbourhood for many years. Its main features were that although the mine was not yet in a paying condition its prospects were most encouraging, presenting every indication of becoming in depth equal to Great Laxey, and, therefore, that the mine should not be abandoned. From all the directors could gather, there appeared no doubt as to the intention of the shareholders to take up the shares of the new company, so that the mine could be thoroughly developed; therefore, the board had come forward with the necessary resolutions for winding-up the present and forming the new company. The chief difficulty had been with the preference shares in the old company, the holders of which were entitled to receive their money back before the holders of the ordinary shares got anything; consequently, it had been arranged that to the holders of such shares there should be issued fully paid-up shares in the new company, and the rest to be offered to or be distributed among the holders of ordinary shares first, and in the event of their not being taken up to be then offered to the public. That seemed the only fair way to deal with the preference shares, although in the new company there would be more shares, but, on the other hand, the new company would have capital to work the mine. He then read the resolutions, as follows:—

1.—That the Great North Laxey Mining Company (Limited) be wound-up voluntarily.

2.—That Mr. F. C. W. Brandt, public accountant, be the liquidator.

3.—That the liquidator of the Great North Laxey Mining Company (Limited) be and is hereby authorised and directed to forthwith contract and agree to transfer and sell in the name and on behalf of the company, to a trustee for and on behalf of a new limited company, about to be formed, the mine now being worked by the company, and known as the Great North Mine, in the Isle of Man, as now held by this company, with all rights and appurtenances thereto, and all the estate and title of the company therein, and all the plant, machinery, halvans, ores, and other property thereon or therein, and all the assets, right, easements, property, and effects of this company, of whatever nature or kind soever, upon the following terms and conditions:—

That the said new company shall be incorporated under the provisions of the Companies Acts, 1862 and 1867, within two months after the confirmation of this resolution, and shall, by its Articles of Association, or by a resolution passed within two months after the said confirmation, adopt the contract to be entered into by the said trustee on its behalf.

That the capital of the said new limited company shall be 50,000*l.*, divided into 25,000 shares of 2*l.* each, with power to increase.

That by way of consideration for the premises the said new limited company shall undertake and pay and satisfy the whole of the liabilities of this company, and indemnify the said company therefrom to the satisfaction of the liquidator to the extent of not exceeding 3000*l.*

That, by way of further consideration, the said new limited company shall allot and transfer to the liquidator of this company, who is hereby authorised to receive the same for distribution, as hereinafter mentioned—17,856 fully paid-up shares of 2*l.* each in the said company.

That the said 17,856 fully paid up shares shall be distributed as follows:—

| | | |
|---|---|---|
| To the preference holders in the present company absolutely at the rate of one share of 2*l.* each for each two preference shares of 1*l.* each | 3,566 | Shares. |
| To the ordinary holders in the present company as a bonus, on condition that they subscribe for shares of 2*l.* each in the new limited company, at the rate of two of said bonus shares for each one share subscribed for and paid on | 14,290 | ,, |
| To be issued at 2*l.* each, as above | 7,144 | ,, |
| Total | 25,000 | Shares. |

And in case any of the said 7144 shares shall not be subscribed for on the above terms within 14 days from the date of the confirmation of this resolution, the liquidator may offer them on the same terms and conditions to other parties, giving the option first to preference holders in the present company.

That the whole of the costs and expenses of carrying out the agreement and of winding-up this company, including the remuneration of the liquidator, shall be paid by the new limited company, provided this agreement be carried out, but not otherwise.

That a general authority be and is hereby given to the liquidator to adopt and carry out, and do and execute all and every such acts, matters, deeds, and things as may be necessary to carry out this resolution, and the transfer and assignment to the new limited company, and in his discretion, if deemed necessary, to extend the time for carrying out this resolution, or to waive or abandon, or vary any directory or mere formal parts of this resolution.

The CHAIRMAN, in reply to a question, stated that it was considered a full margin had been left to cover the liabilities of the company, and yet they leave ample capital for the new company. The holders of preference shares would receive ordinary fully paid-up shares in the new company. There seemed every reason to suppose that the general body of shareholders would take their interest, in that case 14,228*l.* would be available, while the liabilities of the present company would probably not exceed 1500*l.*, so that there would be 12,000*l.* as fresh capital to work the mine, which according to all calculations would be ample to bring it into a paying condition.

A SHAREHOLDER asked if there would be any liability upon the shares?

The CHAIRMAN replied in the negative, adding that it was proposed to call up the whole of the capital at once. In the new company there would be 25,000 shares of 2*l.* each; 3566 would represent (*i. for l.*) the present preference share, and would be given to the holders absolutely, and 14,290 would be given as a bonus to those who took the 7144 shares—in other words, three would be allotted to each applicant for one subscribing share. From all that could be heard the shares would be readily taken up.

Mr. MURCHISON mentioned that up to the end of November the liabilities ex-

ceeded the assets by 1187*l.*; bringing in the December (estimated) cost, and crediting the 30 tons of lead ore to be sold on Jan. 18 at 15*l.* per ton, the balance of liabilities over assets up to the end of December was 1120*l.*

A SHAREHOLDER asked if it were intended to retain Capt. Rowe as manager?

The CHAIRMAN said that was a question entirely for the new company to determine.—A vote of thanks to the Chairman terminated the proceedings.

## TUOLUMNE GOLD MINING COMPANY.

An extraordinary general meeting of shareholders was held at the offices, Change Alley, on Thursday,—

Capt. CARLYON SIMMONS in the chair.

Mr. LAYTON (the secretary) read the notice convening the meeting.

The CHAIRMAN said the directors had certainly expected more responses to their appeal for additional capital, but having been thus disappointed there was no alternative but to wind-up the company. It was the old story—as soon as the subscribed capital had been expended, no matter how good the property, additional capital could not be obtained, and the inevitable result ensued. There could be no doubt as to the value of the mines, but the directors were convinced it was no good going on incurring expenses, but that it was far better to wind-up the company voluntarily, instructing the liquidator to use every endeavour to secure as good a purchase as possible, for there seemed no doubt it could be sold for a good price. He then moved that the company be wound-up voluntarily.

Mr. CORNER seconded the proposition.

Mr. ROSS (who represented the holders of 1946 shares) said he had heard it stated upon good authority that one or two of the directors had already entered into negociations for the sale of the property. He should like to know if that was the case?

The CHAIRMAN entirely disclaimed any knowledge of such a circumstance.

Mr. ROSS said the name of Mr. Hawes had been mentioned in connection with that of Mr. Gashwaller.

Mr. HAWES said there was no truth whatever in the statement.

A SHAREHOLDER asked what amount it was thought the property would realise?

The CHAIRMAN said that entirely depended upon circumstances. It ought to realise a good round sum, especially if purchased by the owners of the adjoining property, to whom it would be worth more than to anybody else, in consequence of the machinery upon the Tuolumne property.

The resolution was put and carried unanimously.

Messrs. H. Davey and Layton (the secretary) were appointed liquidators.

A vote of thanks to the Chairman and directors terminated the proceedings.

## THE MINING COMPANY OF IRELAND.

The following is an abstract of the report to be presented by the directors at the half-yearly assembly on Thursday, the 16th:—

The transactions of the company for the half-year have resulted in a profit of 260*l.* 2s. 1d. The directors have to regret that the advance in the price of metals, adverted to in their last report, has not been maintained so far as copper is concerned, and this fact, and the increased prices of labour and materials, have injuriously affected the income of the half-year. In Knockmahon Mines, the copper ore raised during the past six months amounted to 1466 tons, as compared with 1452 tons in the previous half-year, and the quantity sold was 1461 tons. There has been a loss on the operations at this establishment of 1549*l.* 7s. 9d. From Luganure Mines the quantity of lead ore raised was 412 tons, as compared with 513 tons in the previous half-year. The quantity of ore delivered to the Ballycorus Smelting Works was 506 tons 19 cwts., of the value of 5638*l.* 17s. 1d. The operations at those mines resulted in a loss of 2246*l.* 12s. 8d., after an expenditure of 1057*l.* 18s. 7d. upon explorations and works of a prospective character. After a further outlay of 115*l.* 10s. 8d. on explorations to fairly test the Ballynagoneen Mine, the board, seeing no profitable result or encouraging prospects there, have come to the determination of abandoning the undertaking.

The general operations at Ballycorus Works during the past half-year have resulted in a profit of 2232*l.* 1s. 4d. At the Slieverdagh Collieries, during the past six months, the output of coal and culm amounted to 19,512 tons, and the sales to 26,760 tons. In the corresponding period of 1871 the output was 19,088 tons, and the sales were 24,305 tons. The profit on the half-year was 4563*l.* 17s. 6d. At the Duhallow Collieries, the output of coal and culm was 3018 tons, and the sales were 3282 tons. The output in the corresponding period of 1871 was 4898 tons, and the sales were 4750 tons. On the transactions of the half-year there has been a loss of 23*l.* 11s. 3d. Three members of the board, Sir Robert Kane, Mr. P. Byrne Darcey, and Mr. Richard Martin, and the auditors, Mr. James F. Lombard, Mr. Richard Seymour Guinness, and Mr. Edward Fottrell retire, but are eligible for re-election, and offer themselves accordingly.

[For remainder of Meetings see to-day's Journal.]

## MINING DIVIDENDS DURING THE YEAR 1872.

Subjoined is a corrected list, in alphabetical order, of the mines which have paid dividends during the year:—

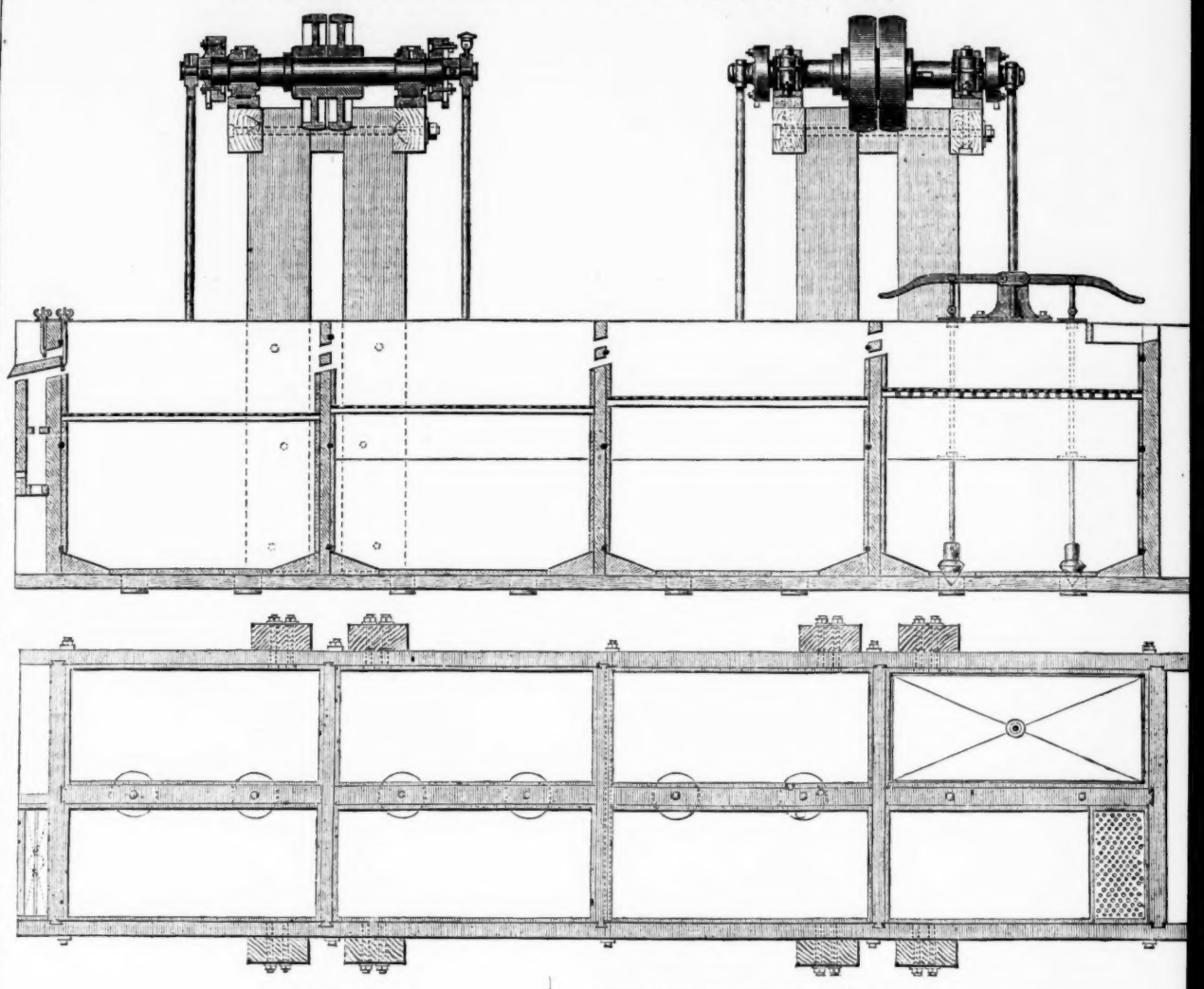
BRITISH MINES.

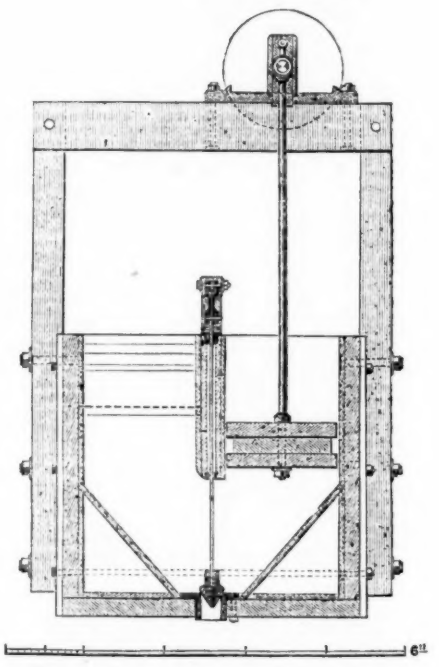
| | Metals. | No. of Divs. | Total per Sh. | Amount. |
|---|---|---|---|---|
| Alderley Edge | C | 2 | £0 10 0 | £ 750 0 0 |
| Belowda Beacon | T | 2 | 0 2 0 | 1,000 0 0 |
| Blaen Caelan | S-L | 1 | 0 1 0 | 1,000 0 0 |
| Botallack | T, C | 3 | 16 0 0 | 3,200 0 0 |
| Bronfloyd | S-L | 1 | 2 0 0 | 1,000 0 0 |
| Brookwood | C | 3 | 1 2 0 | 4,400 0 0 |
| Cargoll | S-L | 1 | 2 10 0 | 2,147 0 0 |
| Cashwell | L | 2 | 0 5 0 | 1600 0 0 |
| Castle-an-Dinas | T | 1 | 0 2 0 | 500 0 0 |
| Carn Brea | T, C | 4 | 15 10 0 | 18,500 0 0 |
| Cooks Kitchen | T | 4 | 3 15 0 | 9,187 10 0 |
| Devon Great Consols | C | 1 | 6 0 0 | 6,144 0 0 |
| Dolcoath | T | 6 | 10 12 6 | 45,645 0 0 |
| East Balleswidden | T | 2 | 0 0 10 | 206 8 0 |
| East Caradon | C | 2 | 0 5 0 | 1,436 0 0 |
| East Darren | L | 6 | 6 0 0 | 1,800 0 0 |
| East Pool | T, C | 6 | 1 3 6 | 7,200 0 0 |
| Foxdale | L | 2 | 1 0 0 | 2,800 0 0 |
| Gawton | C | 2 | 0 10 0 | 1,975 0 0 |
| Glasgow Caradon | C | 1 | 0 0 10 | 1,562 10 0 |
| Great Laxey | L | 1 | 0 6 0 | 4,500 0 0 |
| Great Wheal Vor | T | 2 | 0 5 0 | 1,477 0 0 |
| Green Hurth | L | 4 | 0 12 0 | 3,840 0 0 |
| Herodsfoot | L | 3 | 3 15 0 | 3,840 0 0 |
| Hingston Down | C, T | 3 | 1 0 0 | 6,000 0 0 |
| Lisburne | L | 6 | 6 0 0 | 2400 0 0 |
| Lovell | T | 2 | 0 8 0 | 1,113 12 0 |
| Marke Valley | C | 3 | 0 8 0 | 3,600 0 0 |
| Minera | L | 4 | 3 0 0 | 27,000 0 0 |
| Mining Company of Ireland | L, &c. | 1 | 0 3 6 | 3,600 0 0 |
| New Pembroke | T, C | 2 | 0 7 0 | 2,240 0 0 |
| North Hendre | L | 1 | 0 2 6 | 1,500 0 0 |
| North Levant | T, C | 2 | 1 8 0 | 2,800 0 0 |
| Pendarves United | C, T | 1 | 2 0 0 | 512 0 0 |
| Penhalls | T | 4 | 0 13 0 | 3,250 0 0 |
| Phœnix | C, T | 2 | 0 15 8 | 4,700 0 0 |
| Prince Patrick | S-L | 1 | 0 1 0 | 900 0 0 |
| Providence | T | 3 | 1 10 0 | 1,680 0 0 |
| Roman Gravels | L | 4 | 1 1 0 | 12,600 0 0 |
| Shelton China-Clay | T | 1 | 0 1 0 | 500 0 0 |
| Shineford Dressing | T | 1 | 0 1 1 | 325 0 0 |
| South Caradon | C | 5 | 24 0 0 | 12,288 0 0 |
| South Carn Brea | C, T | 2 | 0 7 6 | 1,875 0 0 |
| Spearne Moor | T, C | 1 | 0 10 0 | 121 0 0 |
| Tankerville | L | 4 | 1 4 0 | 14,400 0 0 |
| Terras | T | 2 | 0 3 0 | 2,775 0 0 |
| Tincroft | T, C | 4 | 8 0 0 | 48,000 0 0 |
| Trumpet Consols | T | 4 | 2 0 0 | 8,000 0 0 |
| Van | L | 4 | 2 17 0 | 42,750 0 0 |
| West Chiverton | L | 3 | 1 10 0 | 4,500 0 0 |
| West Wheal Frances | T | 3 | 1 7 6 | 2,818 0 0 |
| West Wheal Seton | C | 5 | 2 0 0 | 3,600 0 0 |
| Wheal Basset | C | 2 | 2 10 0 | 1,280 0 0 |
| Wheal Grenville | C, T | 3 | 0 7 6 | 1,942 2 6 |
| Wheal Jane | T | 3 | 1 0 0 | 2,048 0 0 |
| Wheal Kitty (St. Agnes) | T | 4 | 2 0 0 | 8,590 0 0 |
| Wheal Kitty (Lelant) | T | 1 | 0 5 0 | 256 0 0 |
| Wheal Margaret | T | 2 | 1 0 0 | 896 0 0 |
| Wheal Mary Ann | L | 4 | 1 1 6 | 1,100 16 0 |
| Wheal Mary Hutchings | T | 2 | 0 16 0 | 800 0 0 |
| Wheal Owles | T | 3 | 24 10 0 | 1,960 0 0 |
| Wheal Uny | T | 1 | 0 4 0 | 817 0 0 |
| Wheal Whisper | T, C | 1 | 0 1 0 | 500 0 0 |
| Wicklow | SUL | 1 | 0 3 6 | 3,653 13 0 |

FOREIGN MINES.

| | | | | |
|---|---|---|---|---|
| Alamillos | L | 2 | 0 2 6 | 4,375 0 0 |
| Almada and Tiri | S | 1 | 0 1 0 | 6,500 0 0 |
| Battle Mountain | C | 1 | 0 10 0 | 4,248 14 9 |
| Bensberg | L | 1 | 0 3 4 | 1,000 0 0 |
| Birdseye Creek | G | 3 | 0 5 0 | 3,750 0 0 |
| Burra Burra | C | 1 | 0 10 0 | 6,160 0 0 |
| Cape Copper | C | 4 | 3 17 6 | 77,500 0 0 |
| Don Pedro | G | 1 | 0 2 0 | 7,616 4 0 |
| Emma | S, G | 12 | 3 12 0 | 180,000 0 0 |
| English and Australian | C | 2 | 0 5 0 | 17,500 0 0 |
| Ferguson | G | 2 | 0 6 0 | 4,500 0 0 |
| Flagstaff | S | 11 | 2 6 0 | 69,000 0 0 |
| Fortuna | L | 3 | 0 13 6 | 16,875 0 0 |
| Gold Run | G | 7 | 0 2 4 | 2,633 6 8 |
| Linares | L | 2 | 0 10 0 | 7,500 0 0 |
| Lusitanian | L | 1 | 0 1 0 | 396 7 0 |
| Mammoth Copperopolis | C | 1 | 0 5 0 | 375 0 0 |
| Mineral Hill | S | 2 | 0 6 0 | 9,000 0 0 |
| Preussische Bergwerks | CL | 2 | 3 0 0 | 36,000 0 0 |
| Pontgibaud | S-L | 2 | 1 18 9 | 19,375 0 0 |
| Richmond Consols | S | 1 | 0 4 0 | 8,800 0 0 |
| Sierra Buttes | G | 3 | 0 6 0 | 33,750 0 0 |
| Sweetland Creek | G | 3 | 0 10 0 | 7,500 0 0 |
| Tharsis | SUL | 1 | 0 14 0 | 83,879 10 0 |
| Tolima | G, S | 2 | 0 3 9 | 3,750 0 0 |
| Westphalian | S-L, CL | 1 | 3 0 0 | 1,500 0 0 |
| Total | | | | £972,135 5 11 |

## ORE-DRESSING MACHINERY.






### ORE DRESSING MACHINERY—No. XXIII.

CONTINUOUS JIGGER.—At various mines in Nassau a long jigger is employed for treating complex ores, composed of blende, copper, lead, and spathic iron. The total length of sieve is 16 ft., its width varying according to the size of grain to be jigged. In the accompanying illustrations Fig. 1, longitudinal section, shows four sieve compartments, four sieves, each sieve slightly stepped one below the other, eight discharging valves, two to each chamber, a sieve plate for the distribution of stuff, and two discharging ways, proceeding from the fourth sieve, each way being provided with a slide regulator—one of these regulators, the lowest, regulates the flow of stuff to a dividing-box, or classifier, and to a waste outlet. To command the four pistons, adjust the stroke on each, and to increase the speed of the second over the first pair, two driving shafts are employed, each fitted with a fast and loose rigger. Fig. 2 is a transverse section of the hutch, piston, and sieve, also an elevation of the framework carrying the head gear, the piston-rod, and slotted disc; whilst Fig. 3 is a plan of the piston and sieve compartments. The dressing capacity of this apparatus, as in all other jiggers, will depend upon the difference between the density of the ore and veinstone, and the grain size of the stuff to be concentrated, whilst the thickness of the beds will in turn be governed by the normal quantity of ore contained in the stuff and the weight of stuff regularly introduced within a given period. By close sizing, together with a careful adjustment of the piston speed, length of stroke, and flow of water, clean merchantable lead and blende may be obtained direct, also spathic iron, separate from grauwacke or slaty rocks. JOHN DARLINGTON.

*2, Coleman-street-buildings.*

IMPROVEMENTS IN TRIP HAMMERS.—In the arrangement invented by Mr. C. C. BRADLEY, of Syracuse, New York, a rocking frame driven by an adjustable eccentric imparts a reciprocating motion to the helve of the hammer through the agency of buffer springs. He uses wood packing between the different parts of the framing: the yoke buffer-springs and the helve are arranged in combination with the trunnions, which are secured in a peculiar manner to the helve. The connecting-rod has a double pin, or universal joint, arranged in combination with the adjustable eccentric and connecting-rod. He uses a treadle and break-block, and a counter-weight is attached directly to the break-block. An adjustable buffer-spring is arranged in connection with the helve.

IMPROVED FURNACES.—In the improved apparatus invented by JOSEPH TOWNSEND, manufacturing chemist, of Glasgow, the grate bars are disposed transversely, an endless series of them being moved by two or more endless pitch chains. The fuel is introduced through a hopper at the inner end of the furnace, and the grate bars are in the upper part of their course made to move from the inner towards the outer end instead of the ordinary reverse arrangement. The ash-pit and fire-chamber are closed, excepting the outlet for the gases and certain air inlets and valves. The air necessary for combustion is forced in, and may be regulated in quantity so as to suffice for the complete combustion of the fuel, or the supply may be restricted so as to form principally carbonic oxide.

## THE TRETOIL TIN AND IRON MINING COMPANY.

We wish to direct the attention of our readers to the prospectus of this company, which we publish in to-day's Journal.

The promoters have adopted a plan in dealing with the property which stamps it at once as a genuine undertaking; and we venture to say that if this plan were more generally pursued investors in mines would meet with fewer disappointments, and mining enterprises would meet with a greater share of public favour than has been their lot of late.

As may be gathered from the manager's report, the mine came into the hands of the present, or we should say the late, proprietors (the company now registered under the new title) some 12 months ago; and instead of offering shares to the public when the workings were full of water they have been "at great pains and expense to prove the value of the property" before bringing it out, and the result is that they are now in a position to say—'There is the mine in full working order; and if you have any notion of taking shares with us, we shall be glad to show you the tin and iron lodes extensively laid open, and only waiting to be taken away." They have sampled the tin lode at seven different points, which, taking the black tin at a lower price than it has seen for a considerable time, gives an aggregate value of 160*l.* per fathom, and an average value of 53*l.* per fathom—a value which, with a very moderate output, is estimated to yield a dividend of 50 per cent. on the whole capital of the company, without taking the iron lode into account at all.

During the year they have been working they have raised and shipped several thousand tons of iron ore, and with additional labour they can considerably increase the output of this mineral, and so add largely to the profits of the company. The iron, as will be seen by the analysis, is of exceedingly good quality, and no doubt only wants to be more generally known to realise as high prices as any ore in the market. The mine appears to have natural advantages which are very greatly in its favour, the principal one being that for many years they will require no pumping machinery, which, considering the present high price of fuel, is of very great importance.

The shallow depth at which the minerals are found is remarkable, and not only makes the mine much cheaper to work, but gives great promise of much richer deposits to be found when the works are sufficiently advanced to render it advisable to mine below the adit. In addition to this there are the south lodes, which are said to be very rich, and to which the directors promise to devote considerable attention. There are also (as reference to Mr. Luke's report will show) copper lodes in the sett, which about ten or a dozen years ago were very extensively worked, and from which a very large quantity of copper was raised—indeed, we believe that at that time some 600 people were employed at this and the adjoining mine—Tregullon—which were both worked by one company. This company shortly before they ceased work discovered, and to some extent developed, the present tin and iron lodes; a junction which occurs near the shaft, however, seems to have led them astray with regard to the tin lode, and that, coupled no doubt with the depressed state of mining at that time, seems to have induced them to abandon the mine, though there was no substantial reason for the abandonment has been abundantly proved during the recent operations, as the tin is of sufficiently good quality to pay for working even at the prices which were then ruling. Probably at that time the iron lode was of no practical value, on account of the low prices of iron. The very small amount of attention given at that time to iron mining in Cornwall is also, no doubt, one reason why the mine was not prosecuted for the mineral; at all events, comparatively little was taken away, and it can now be got and shipped at a very satisfactory profit

GAWTON.—It is now firmly believed that the crisis in this mine is over. These shares not more than six months since stood at 7*l.* each. The price of to-day is 3*l.*, making 12,000*l.* the value of the undertaking. The rise of 5*l.* per ton in copper this week makes a very important consideration for this mine. We find that the credit balance is 750*l.* It now appears certain that there will be a dividend of a substantial nature to be declared next meeting, even without reference to the enhanced value of copper ore. The operations since the last meeting consisted in stoping 541 tons of copper ore and 60 tons of mundic. The Chairman hoped to be able to declare a dividend at the next meeting, and which circumstance may now be said to become a reality since the rise in copper. The few shares in this mine render it at once a very eligible investment, and a property which will shortly obtain a much better figure in the markets. A remarkable improvement has taken place in the mine lately. The 82, 95, and 105 fm. levels, driving east from King's engine-shaft, have improved in an extraordinary degree. Capts. G. Rowe both declare the property to be immensely improved, and, above all, that the future prospects of the mine are looking well for an improved condition also. All information is readily obtained at the office, 22, Austinfriars. The management of this property is second to none in England, and the respectability of the directors admits of nothing to be desired. There are, undoubtedly, solid grounds for believing that Gawton Copper Mine will stand in a far more satisfactory condition ere many days have elapsed: an expected rise in the value of these shares will shortly testify to the truth of these observations.

# Royal School of Mines, Jermyn Street.

## MINERALOGY*—LECTURE V.

### CARBON AND COALS.

I have selected for consideration this evening some substances of the very highest value, which, although having a common band of relationship, nevertheless differ from each other in a most extraordinary degree. Further, they are substances of such remarkable importance to mankind that I feel it is almost beyond the possibility of bringing within a single hour anything more than the outlines of some of the features presented by them, but I will endeavour to place before you as prominently as possible some of the principal facts with regard to their resemblance and points of difference. In speaking of carbon of course we are speaking of an element made known to us by chemists, which combines with certain proportions of oxygen, each of these combinations presenting distinct properties. I suppose everyone is acquainted more or less with some of the principal facts connected with the "diamond"—the prince, as it were, of all stones, with the enormous value which has been assigned to it by mankind from the earliest ages, and with its intense hardness, so superior to that of all other substances as to be capable of scratching, polishing, or cutting all other materials. It is a very significant fact that this remarkable gem, one of the most beautiful, if not, indeed, the most beautiful, with such a brilliancy, transparency, and strong refracting power is scarcely to be distinguished by chemical means from these black masses of coal. The diamond is found crystallised most distinctly in a great number of localities in the simple eight sided figure—the octahedron, and although it assumes a great number of more complicated figures, yet the remarkable fact is always observable that in whatever form it may be crystallised it is capable of being split parallel to the faces of the octahedron. The direction of that cleavage has in many cases an extremely important application—as, for example, a flaw in one of these faces is easily removed, and again the application of the diamond in many of the arts—glass cutting, for instance—requires splinters with sharp edges or sharp points, which may thus be easily obtained. One of the most curious applications of the diamond which has attracted considerable attention during the last few years is that of employing it for drilling holes in hard rocks, whether for the purposes of blasting or perpendicular borings. An ingenious Frenchman, M. Leschot, a few years ago put forward the proposition that instead of attempting to bore by chipping off pieces of the rock with steel tools, it would be better to take pieces of diamonds (of course, selecting the less important kinds as regards ornament) set in a ring, or round the end of a cylindrical tube, and then by rotating them under a considerable constant pressure upon the rock, we should be able to cut away rapidly. By this method works which would have extended over several weeks with the old means of working have been accomplished in a few hours, sometimes at the wonderful rate of 20, 30, or 40 ft. per day. Thus, besides the application of these gems to purposes of ornament and to grinding and to polishing, we have now a new application, which is likely to absorb considerable quantities of the material.

The diamond is found in some of the streams in Brazil, from whence we now obtain large supplies; it also occurs in some of the stream deposits of the East Indies, and all will remember the great excitement of the last two or three years, with the accounts of its occurrence in South Africa, in the detrital deposits of some of the rivers. Here is a fine specimen of a crystallised diamond, with the corners of some of its faces rounded as is wont with diamonds. I have only time to draw attention to one or two points connected with the diamond, and first as to its extraordinary brilliancy, which quality at once attracts attention to it, and gives it its great value as an ornament: it is entirely owing to its high refractive power. Let me explain the meaning of this expression. If we take a spherical portion of any transparent substance, we shall find that a ray of light falling upon it directly, and passing through its centre, would pass through the substance with its direction unchanged, whereas if it falls a little obliquely or to one side of the central line, the ray is refracted—that is, bent out of its original direction, more or less according to the density of the material. Parallel rays will meet and form a focus by this means at a certain point: if the sphere be of water the focus will be at a distance from the edge of it equal to its diameter; if of a certain kind of glass only about half that distance, whereas in the diamond the rays are so much refracted as to come to a focus within the substance itself. And thus a great number of rays which pass quite through glass are in the diamond reflected and thrown back again, giving rise (especially in the form cut into a large number of faces, known as the "brilliant") to its peculiar brilliancy. It is a remarkable fact that the diamond has never, with the exception of one or two instances, perhaps, been found in its original position in the rocks, invariably in Brazil, Cape of Good Hope, &c., it has been found mixed with sand and pebbles, the result of the wearing and washing down of large deposits of rock. Sometimes a diamond is shown and said to be embedded in the matrix, but in the majority of instances it will be found on close examination to be nothing else than a mass of detritus in which the diamond has been more or less firmly embedded. It would take too long to speak of the varieties of the diamond and the localities where they occur, or to discuss the origin—the latter a point yet involved in much uncertainty.

We will pass on to other materials belonging to the same chemical class, but which illustrate the proposition laid down in the first lecture that it is not sufficient to know merely the chemical constitution of a substance to recognise it in its different varieties. Here is a substance called improperly "black lead," or "plumbago," which latter term is likewise unsuitable, as implying that it has some connection with lead; its proper name is "graphite," from "grapho," I write. It is a substance which crystallises very distinctly, but never in anything approaching the shape of the diamond in a totally different system, the forms of which never by any means pass into those of the first system; it crystallises in the hexagonal system: large crystals are not very common. Moreover, the thin hexagonal plates (generally minute) in which it occurs interfere with each other so much as in some cases to render them curved. While the diamond stands at the very top of the mineral kingdom for hardness, and the name of "adamant" has become proverbial, graphite stands at the very bottom, and its softness is so notable that if it is touched with a piece of paper or with the finger portions of it come off. Yet, strange to say, chemists point out and establish by satisfactory experiments that these two minerals are composed of precisely the same substance—carbon. It is true that in the case of graphite some examples amongst them are far from pure, so it would be with masses of diamonds, but in some instances graphite contains as much as from 90 to 95 per cent. of carbon, with a little oxide of iron, &c., which may be regarded as impurities. I need not detain you with speaking of the manifold uses of graphite. Owing to its very great softness and the facility with which these minute scales, of which I spoke, slide over each other, it is largely used as an antifrictional material. Its use for pencils and marking in various ways is known to everybody, as also its employment in giving a shine or polish to cast-iron surfaces. It is used more largely still in consequence of its great degree of infusibility for making "black-lead" crucibles, especially in Central Europe. It is curious to reflect that only 40 or 50 years ago it was believed that the best kinds of this material were only to be found in a remarkable valley in Cumberland—Borrowdale—(hence the term of Cumberland lead pencils, &c.) And this was held so important that a guard-house was erected at the mouth of the mine, and it was only opened at certain times, when the master and a few workmen alone were admitted, and after getting a certain quantity it was again closed. Now, Borrowdale has sunk into comparative insignificance, and large quantities are obtained from Ceylon, Canada, and several parts of Central Europe, particularly Bavaria and Bohemia. The quantity raised in this latter district is so great that the manager of some Bohemian mines informed me two or three years ago that no less than 11,000 or 12,000 tons were raised annually from the mines of a single proprietor. One may count it now by tons in the same way as it was weighed and measured by pounds a few years ago. Large barges loaded with this material and its products, as crucibles, may be seen on the Danube, and it has been found profitable to establish large crucible companies here in London.

We will turn now to certain substances of great value known as coals, in which the carbon (which we have been regarding in its pure state) is mingled with certain gaseous constituents and with impurities, and loses its distinct crystalline state. It is the fashion to speak of the coals as our black diamonds. If we take them in the order of their proportion of carbon, which determines their power as fuel, the variety known as anthracite or stone coal stands first. It is largely developed in the western portion of the South Wales coal field, and in the district of Pennsylvania in America, and on a smaller scale in parts of Ireland (Kilkenny, King's County, Queen's County), North of England, and in the Alps, &c. On examining the geological position of the coal seams which form part of the strata or layers of rock in certain districts, it appears that the lower surface is parallel to beds of hardened clay, shale, or sandstone, and the coal itself will be seen to exhibit more or less of this stratified character. On this parallelism and the stratification depend almost everything, searching for coal, possibility of working it, the best methods to be employed, the safety and lives of the men, as well as the reasoning about origin of the coal. Although at first deposited horizontal, these layers in most cases are not so now, they have been turned up into basins, or in some cases have been raised into a vertical position, or even turned completely over.

Anthracite is harder than the other varieties, and has a fine surface, is an excellent fuel, but of limited application, in consequence of the difficulty experienced—especially by strangers—in getting it to light. The peasants in Ireland, Carmarthenshire, &c., however, make most magnificent hot fires with it, taking care to light the fire some hours before it is wanted to be used; and it then vindicates the assertion that it is the purest fuel we have, containing from 90 to 95 or 98 per cent. of carbon. Next in order come the steam coals, worked especially round Merthyr Tydvil and Aberdare, and largely sought for men-of-war and other steam vessels. It is also known as smokeless or free burning coal: burns with a very small quantity of flame or smoke, and is much more easily lighted than anthracite. We then pass by gradual transition into the more bituminous coals of the midland district (Staffordshire, Derbyshire, Yorkshire, Cheshire, and Lancashire), which give off a certain amount of flame and smoke, but are very suitable for certain purposes. The Silkstone seam, which now makes its way largely to the metropolis, is from the western side of Yorkshire. In estimating the value of a coal district it is necessary to know not only the total thickness of the coal measures, or of the coal seams, unless we also know the number of the seams and their individual thickness. The least thickness which it will be profitable to work depends not only on the nature of the coal, but also the facility of getting it, and the means of disposing of it when obtained. Among a number of seams it will be the business of the manager of the colliery to determine which shall be first worked—*i.e.*, which under the existing circumstances it would be most profitable to work. The following statement shows the average thickness of the coal in these typical fields, together with the number of seams considered workable, and the total thickness of the coal measures (that is the strata containing the coal seams):—

| | Number of seams. | Thickness of coal. | Thickness of coal measures. |
|---|---|---|---|
| South Wales | 57 | Feet 179 | 8,000 |
| North Staffordshire | 62 | 165 | 5,000 |
| Derbyshire | 40 | 86 | 200 |
| Newcastle | 16 | 50 | 2,000 |
| Westphalia | 83 | 173 | 6,000 |
| Saarbruck | 164 | 338 | 11,000 |

The supply in the coal fields as regards the North of England is distinctly limited as regards the land side, and it is almost possible to count on the fingers the tens of years which that supply will cover, and, therefore, we may look forward to its end at an early date if the present consumption keeps up, or a still earlier if the consumption is increased.

Regarding coal as a mineral, we may often see very distinctly in pieces of it that it is built up of laminæ or layers, often very minute, and sometimes these layers are alternately bright and dull, and burn, giving out a different amount of flame. Under each seam of coal geologists point out a bed of indurated clay containing the roots of the plants which form the coal, and were deposited in these successive laminæ. If the latter be of considerable thickness it is found advisable to separate the various kinds, and apply them to distinct purposes, the bright for household purposes, where smoke is not of much matter, and the other and harder kinds with less smoke for iron smelting, steam vessels, &c. In some cases the bands are very small, as many as 20 in an inch. The seams, too, are often thin, and parted by beds of shaley substance, sandstone, &c. One bed of coal, by way of example, at Church Gresley, however, has a thickness of from 13 to 15 ft., without impurity or dirt parting. The intermixed rocks are frequently of a black colour, and are hard to distinguish—especially by the bad light underground—from the coal itself; when these are put into the fire we have occasionally a series of explosions, and complaints are made that the coal is not properly screened and picked. On a closer examination of the coal it will be seen that in many districts the coal is divided vertically by a series of parallel separation planes, which enable us to split off by suitable means successive laminæ of coal. The miners take advantage of this property in those districts where it is especially developed by first undercutting or working out the "warrant" from under a mass of coal, and then wedging it down into suitable masses; and this also enables them to make a large proportion of large coal, which is a great object with the coal proprietors, inasmuch as in some districts the small coal cannot be got rid of. By this means pieces, sometimes 20 ft. long, may be split off, having smooth faces running down these divisional planes. In some districts (as in Leicestershire and Derbyshire) these planes are very constant over many miles of country. The structure of the coal is in parts more complicated by having cross planes running parallel to each other at right angles to the first set of planes, and by this means the coal breaks into more or less cuboidal blocks, or in some cases oblique rhombohedral blocks. If these joints pass to the roof of the coal and into the roof itself, when the coal is removed there is great danger of portions of the roof falling down, and, in fact, more lives are lost from such causes than from all the explosions put together, though as they occur singly or with only two or three killed at a time little public attention is called to them.

There is yet another variety of coal known as "Cannel," which does not soil the fingers when touched, and is capable of taking such a degree of polish that it has been applied to ornamental purposes. It sometimes occurs in seams 2 or 3 ft. thick, and a remarkably fine block from Wigan may be seen in the hall of the museum. Geologists will tell you that in some respects, especially in structure, it differs considerably from ordinary coal, especially in the transition with shale seen in certain varieties. A small seam of it has been struck in the extension of the workings of the Durham coal field beneath the sea. It is very curious to remark that although there have been during the last few years many varieties of coal sold under the name of Wallsend, there has been no real coal from that classical colliery in the market, it having been closed for years till within a recent period.

"Lignite," or brown coal, is not recognised as a true carboniferous deposit: it is a material which has a smaller proportion of carbon, and a much larger proportion of gaseous constituents than true coal. In appearance it often looks exactly like wood, and it seems to occupy an intermediate position between wood and coal. It is largely developed on the Continent, in Bohemia, and some parts of Prussia, and in our own country occurs at Bovey Tracey.

* A Course of Six Lectures to Working Men, at the Geological Museum, by W. W. SMYTH, F.R.S.

## DUDLEY MINING INSTITUTE.

An adjourned meeting of the South Staffordshire and East Worcestershire Institute of Mining Engineers was held in the Geological Museum, Dudley, on Monday, Mr. HENRY JOHNSON (the president) in the chair. There were about 50 members present.——The PRESIDENT reported that there had been no meeting of the Coal Trade Committee since the previous meeting, and therefore the special rules remained unfinished. There was, however, no immediate hurry, inasmuch as the trade was allowed until April 1 to complete the making of the rules. In all probability a meeting had not been called in consequence of the numerous engagements of the Government Inspector at the present moment. Mr. Baker had had a large number of doggies acting under butties, or doggies managing for owners, before him lately, and he (the speaker) understood that the Inspector had declined to recommend any of them for certificates of service as "manager." There were a number of young practitioners there too.——Mr. MASON said Mr. Baker had recommended the latter to apply for certificates of examination.——Mr. DUNN attended the meeting, and it appeared to him that the difficulties surrounding the "manager" question were fading away.——Mr. MASON gathered from what Mr. Baker said that the mining engineers would have no greater responsibilities than before the passing of the new Act.——Mr. DUNN said he had supplied his doggies, who could all read and write, with memorandum books, and they had made daily entries of the condition of the mines since the 1st inst.——Mr. BLAKEMORE (the vice-president) said he had appointed ten "competent persons," and they were independent of the contractor or his deputy. Each of these men entered in a diary the condition of the mine day by day. He was sorry that the meeting the previous week had passed the resolution relating to chartermasters or their deputies as competent persons, because he had heard that the masters talked about raising coal 1s. per ton to meet the increased price of working the coal under the new Act; and, if they did, they could afford to pay independent people to act as the "competent persons."

Mr. HARTSHORNE (of Messrs. Bagnall) said they had independent men—as "competent persons"—to visit the pit, and the butties and doggies refused to examine the pit in the early morning as usual, saying it was the duty of the "competent person," or if not they should have extra pay for doing the work. Clause 51, subsection 3 of the Act in Mr. Pease's book, confirmed the men in that course of action.

Mr. BLAKEMORE thought otherwise, believing that the "competent person's" duty was to examine the pit some time during the 24 hours. The special rules provided for the inspection of the pit before the men went to work.——Mr. DAVIES said he had asked that day at another institute whether a man in the pay of the contractor, as inspector of the workings, would be amenable to the law for incorrect returns, and the answer was "Decidedly yes." This was given on a counsel's opinion. The difficulty in his (the speaker's) opinion might be legally met by giving the doggy a retaining fee equal to the extra labour actually performed.——Mr. EVSELL was of a similar opinion.——A large number of members, including Mr. T. Dando, Mr. Hartshorne, Mr. W. North, and Mr. Llewellyn disagreed with the remarks made by Mr. Blakemore, because they believed that the chartermasters, or the chartermasters' doggies, were the most "competent persons" to go down the pit and inspect it before operations commenced in a morning.——The PRESIDENT wound up the discussion by agreeing with the last speakers.

It was then determined, on the motion of the PRESIDENT, that Dr. Hill, of Birmingham, should be engaged to deliver two popular lectures on the gases met with in mines to the members of the Institute, and any of the public who desired to attend during the present month, of which due notice would be given.

## SOUTH MIDLAND INSTITUTE.

The usual monthly meeting of the South Midland Institute of Mining, Civil, and Mechanical Engineers was held at the Exchange, Wolverhampton, on Monday; Mr. E. JONES (President) in the chair. There were also present Mr. H. Beckett, Mr. T. Rose, Mr. Gilroy (North Wales), Mr. Glennie (North Staffordshire), Mr. Bromley, Mr. D. Davis, Mr. W. Davis, Mr. Laxton, Mr. J. W. Hall, Mr. Underwood, Mr. Fenn, Mr. Parton, and many others. Two new members were elected; and the secretary (Mr. D. W. Lees) announced that he had papers promised upon subjects of great interest to the members by Mr. Marten (of Stourbridge), Mr. Watkins, Mr. Bromley, and others. A fresh paper could be introduced at every meeting of the Institute throughout this year if it should be deemed well. The meeting then proceeded to consider the practical working of the Mines Regulation Act, 1872.

It appeared that throughout the several districts, and at leading collieries, irrespective of what might be conjointly determined upon, there was much activity in the preparation of new special rules, and in the drafting of forms on which to make the numerous entries required by the Act, alike as to ventilation, the hours worked, the ages of the workers, and so forth. Mr. BROMLEY (South Staffordshire) submitted a form of declaration which, he said, would effect considerable saving in cost of certificates otherwise necessary touching the ages of the boys and "young persons." In this declaration either parent filled up the blank spaces in a printed form, entitled "Parent's Declaration as to Age." Therein the parent said:—"I, ——, residing at ——, in the parish of ——, make the following declaration to ——, manager of the mines at the —— Colliery, subject to the Mines Regulation Act of 1872, that my boy (if the age is between 13 and 16, and if over 16) named ——, was born —— in the parish of ——, and is now the age of —— years. Signed ——, Witness ——." He had shown this form of declaration to the Inspector for the district, who said he thought it would meet the requirements of the Act. Mr. Bromley also showed register forms that he intended to use at the collieries of which he had the supervision.

Mr. GILROY (North Wales) exhibited manuscript forms that he had prepared for his collieries, and Mr. DAWES (South Staffordshire), introduced forms which had been printed under his direction. As to special rules, it was agreed that the variations under the new Act would not be conspicuous as compared with the requirements of the old Act. Any colliery might adopt special rules of its own if the rules of the district were not deemed applicable; but in every case the rules must have been submitted to the Inspector for the district, after having been posted 14 days at the colliery.—The CHAIRMAN said that he was drafting out a series of rules applicable to Shropshire, and the work would be completed on the morrow; and a draft of rules for North Wales had been sent to him.—Mr. BROMLEY explained that a code for South Staffordshire was in course of preparation by ironmasters and mining engineers, who had the assistance of the Government Inspector. There was a universal complaint of the restrictions placed by the Government upon the obtaining of managers' certificates by persons in every way competent to receive them.

The PRESIDENT explained that he was accustomed to direct the affairs of his mines by six managers, dividing the collieries, as a whole, into as many divisions. Every one of the six managers was thoroughly qualified; yet, as the correspondence had hitherto been conducted with the Government, through him, he was told that if these gentlemen were to have certificates they must undergo an examination. Neither one of the six hesitated to accept the test, but it involved delays and trouble and cost, which he held were altogether unnecessary. This might be inferred when he explained that one of his sub-managers had been a student at the Royal School of Mines, and had passed all the requirements of that department.

Mr. J. W. HALL (solicitor, and the author of several works upon this Act and the Metalliferous Mines Act) enquired whether the above ground as well as the below ground operations were under the separate management of the persons referred to, and receiving an affirmative answer, said it seemed to him that the men in question came within the meaning of sec. 31 of the Act, as construed in connection with sec. 25, because sec. 25 said that where two or more parts of the mine were worked separately such part might be constituted, for the purposes of the Act, a separate mine. Then came sec. 31, which said that a person who at and since the passing of the Act had acted "in the capacity of a manager of a mine, or such part of a mine as might be made a separate mine, for the purposes of the Act," was to receive a "certificate of service." The words "in the capacity" seemed almost to contemplate such a case as the one put. It was a question not of names but of facts. He did not at all see how it could be said of these men that they had not acted "in the capacity of a manager" of "such part of a mine" as might under the Act be made a "separate" mine for its purposes.

The point might perhaps, however, stand out more clearly if Mr. Jones at once gave a notice in terms of section 25, that those several parts were in fact worked separately. This would be given to the Inspector, but the question of granting a "certificate of service" was one for the Home Secretary, and if the men applied for certificates, and the facts were properly explained, he thought they would succeed. What they intended to do in the future, however, did not seem to really affect the question of obtaining certificates of service, because a man entitled to such a certificate might choose to get it, and only use if when occasion might require. Suppose, for instance, a man who hitherto had acted as a manager thought fit, under the new Act, to become an agent, we would naturally like to get his certificate in case he should ever desire to appoint himself manager, or to accept a post of manager, or to be an owner-manager. Enquiries and explanations led to the revelation that neither throughout North Wales, Shropshire, nor Staffordshire are there now any managers of our collieries, according to the terms of the Act, and it was believed that there is not throughout the whole kingdom a colliery where there is a legally qualified manager. Nor was it thought by leading Government Inspectors that any certificates would be issued for a fortnight. Who, it is enquired, would be responsible in the event of any serious explosion or other accident, the result of mismanagement?

## PATENT CONDENSED PEAT FUEL.

[H. CLAYTON, SON, AND HOWLETT'S PATENT.]

The conversion of peat-bog into fuel is an old problem, and we have much pleasure in recognising its successful solution by the Messrs. H. Clayton, Son, and Howlett, of the Atlas Works, London, W., the eminent makers of brick machinery. Ever since the experiments of Lord Willoughby de Eresby, reported in the Transactions of the Highland and Agricultural Society of Scotland (Vol. V., p. 458, second series, 1835-7), in which the senior partner of the above firm was engaged, he (Mr. Henry Clayton) has had his constant attention drawn to the subject, and for very obvious reasons. During the whole of this long period Mr. Clayton has been "at work," so to speak, and it is to be hoped that at length his labours are about to be rewarded. Practically, during the past summer (1872) the above firm have succeeded in maturing a working system for the solution of the above problem to their entire satisfaction, which system was covered by patent in October last. As is usual in such cases, before a patent was applied for a working model of a peat-fuel machine and apparatus was constructed, and fairly tried in all its details; and so on samples of peat from various parts of England, Scotland, and Ireland have been obtained and successfully operated upon, the results in every experiment being favourable. His Grace the Duke of Sutherland not only sent raw peat from his own bogs, but he also visited the Atlas Works, to see the process of its manufacture; and he, and the distinguished party who accompanied his grace, left satisfied that the conversion of peat-bog into a compact and hence portable condensed fuel was virtually a realised fact, the economical and commercial requirements of the trade being complied with—that is, the project will pay as subsequently noticed. Although the working model above referred to is small, it has produced a sufficient supply of condensed peat not only to test its heating powers, but also its adaptation in other respects to the requirements of the different branches of art in which coal is now consumed.

Speaking in the form of an interrogatory, will Clayton and Company's condensed peat fuel keep down the price of coal? And the obvious answer to this question must be given in the affirmative—Yes; as it is found that the cost of thus converting peat into solid blocks of fuel does not exceed 5s. per ton. For domestic purposes we have only to maintain the fact, for example, that Clayton's patent condensed peat fuel has been tried in the Drawing Room of Her Majesty, when it gave the greatest satisfaction. From the extravagantly high price of coal at the present time (Jan. 4, 1873), the success of the invention cannot fail to procure for it a national patronage. Full-sized machines, apparatus, plant, &c., are being made, and when photographs of these can be had we hope to be able to give an illustrated description of the patent condensed peat fuel machinery and apparatus, &c., of the Messrs. H. Clayton, Son, and Howlett, of the Atlas Works, London, W., drawings being essentially necessary to render a mechanical description intelligible. Meanwhile, we may observe that the raw peat is brought from the bog in squeezing trucks on a tramway; during its transit most of its "free water" is squeezed out. The semi-dry peat is next shot from the squeezing trucks into the mouth of the pulping or masticating machine, in passing through which its fibrous portion is reduced to a very fine state of sub-division, and so likewise is its spongy portion; indeed, the latter, the spongy nature of the raw peat, is by the peculiar process of manipulation completely altered, and a finer and more uniform homogeneous consistence given it than has yet been done by any previous pulping, triturating, or masticating process on record. From and by the masticating machine the peat thus operated is discharged and moulded into blocks, or briquettes, ready for the drying-shed. In drying, the peat thus prepared becomes more *densely consolidated* than was ever effected by the most powerful hydraulic press. Estimates have been carefully made as to the expense of the whole machinery, apparatus, plant, and process, and after leaving a broad margin, and taking coal at its *ordinary price*, the conclusion is that the terms of the patentees will enable capital to be profitably invested in the conversion of our peat bogs into fuel.

ENGLISH ORDERS FOR AMERICAN COAL.—In consequence of the extraordinarily high price of coal in this country very extensive orders have been sent out to the United States from Liverpool for coal. "The Consolidation Coal Company, of Georgetown (says a late despatch) has received orders through Liverpool for great quantities of Cumberland coal, to be conveyed to Bombay, Point de Galle, Madeira, Alexandria, Rio de Janeiro, Aspinwall, St. Thomas, Martinique, Havana, Monte Video, Valparaiso, and several other foreign ports. This goes to prove that the high price which coal has reached in England is affecting our own prices to a great degree. This has never happened in the history of the Cumberland coal trade. The coal will be principally shipped in foreign bottoms from Georgetown. United States vessels are now taking in coal at the Consolidation Company's docks for Aspinwall. A large number of foreign vessels will undoubtedly be in the Potomac in a short time for the purpose of filling the orders referred to. We believe that eventually a system of iron steam colliers of large tonnage will carry United States coal to all parts of the world, bringing back return cargoes, thus making a profit both ways. Some of the vessels now loading carry 4000 tons of coal."

MOTIVE POWER ENGINE AND PUMPS.—The invention of Messrs. PARKER and RONSON, of Alton, relates to improvements in the construction of the pistons of steam and other engines and pumps, the pistons being so arranged that the packing rings may expand both in the circumferential direction of the interior of the cylinder, and also in the direction of the length of the same. The second part of the invention relates to the application of rollers of any suitable material in place of the guide or slide-blocks usually employed, running between or upon straight bars to guide the cross-heads of steam or other engines in their rectilineal motion. These rollers run freely on the gudgeon or cross-head pin being recessed or chambered out round the same. Holes for the passage of oil are formed leading from this chamber to the working face or faces of the rollers, and the gudgeon being hollow, holes are arranged so that oil or other lubricant may pass into the chamber of the roller, and thence through the holes in the same directly on to the working faces, the centrifugal force resulting from the rotation of the rollers facilitating its delivery. The connecting-rods and other bearings of steam and other engines may be lubricated in like manner. The third part of this invention relates to improvements in the construction of the "links" of link motions for actuating the valves of steam and other engines, so that they may be capable of adjustment for the purpose of taking up the play or looseness caused by wear or friction.

CHEMICALS AND MINERALS.—(Messrs. J. Berger Spence and Co., Manchester, Jan. 9)—Soda: Cream caustic, 60 per cent., 18*l.* 10*s.* to 19*l.*; white, 20*l.* to 20*l.* 10*s.*; soda ash, 2 15 16*d.* to 3¼*d.*; soda crystals, 7*l.* 5*s.*; bi-carbonate, 18*l.*; salt cake, 4*l.* 10*s.* to 4*l.* 12*s.* 6*d.*; Glauber salts, 4*l.* to 4*l.* 5*s.*—Borax: Refined, 97*s.* 6*d.*—Nitrate of Soda: At 15*s.* 9*d.* to 16*s.*—Potash: Muriates, 80 per cent., at 9*l.* to 9*l.* 5*s.*, f.o.b.—Prussiate: Red, 3*s.* 2*d.*; yellow, 1*s.* 6*d.* to 1*s.* 6¼*d.*; chlorate, 1*s.* 8*d.*; bi-chrome, 8½*d.*; potashes, 30*s.*; pearl ashes, 47*s.* 6*d.*—Saltpetre: Foreign, 28*s.* 6*d.* to 29*s.* 6*d.*; refined, 36*s.*—Alum: 8*l.* for loose lump; in export barrels, 8*l.* 15*s.*; ground, 9*l.*—Bleaching Powder: At 12*l.* 10*s.*—Ammonia—Sulphate: White and grey, 20*l.* brown, 19*l.* 2*s* per cent.; carbonate, 7*d.*; muriate, 32*l.* to 37*l.*; sal ammoniac, 1sts, 49*s.*; 2nds, 43*s.*—Iron Salts: Green and rusty copperas, 60*s.* to 62*s.* 6*d.*; dry copperas, 55*s.*—Copper Salts: Sulphate of copper, 32*l.* 10*s.* to 33*l.*—Arsenic: 9*l.* 10*s.* for white powdered.—Acid: Tartaric, at 1*s.* 8½*d.*; oxalic, 9½*d.* to 10*d.*; sulphuric, 3*l.* 10*s.* to 3*l.* 15*s.*; carbolic, 1*s.* 4*d.* to 1*s.* 6*d.*—Magnesia: Epsom salts, 4*l.* 17*s.* 6*d.* for refined.—Pitch: 35*s.*—Benzole: 30 per cent., 3*s.* 3*d.* to 3*s.* 6*d.*; 50 per cent., 3*s.* 9*d.* to 4*s.*; 90 per cent., 4*s.* 6*d.* to 5*s.* 3*d.*—Wood Pulp: Moist, 14*l.* per ton of dry pulp: dry, 14*l.* 10*s.*—China Clay, 34*s.* to 40*s.* per ton.—Pyrites: Spanish cupreous, 8*d.* to 8½*d.*; non-cupreous, 10*d.*—Phosphates: Ordinary, 60 per cent., 1*s.*; high strength, 85 to 90 per cent., 1*s.* 4*d.* to 1*s.* 5*d.* per unit: Estramadura, 1*s.* 3*d.*; super-phosphates, 25 to 26 per cent., 2*l.* 10*s.* to 3*l.* 12*s.* 6*d.*; precipitated phosphate of lime, 40 to 50 per cent., 5*l.* 10*s.* to 6*l.* 10*s.*—Manganese: Ores, 140*s.* to 145*s.* for 70 per cent.—Iron Ore: Hematite, 30*s.* to 35*s.*; oolitic, 7*s.* 3*d.* to 8*s.* 3*d.*

## FOREIGN MINING AND METALLURGY.

The Belgian iron trade, as is usually the case at the commencement of every new year, presents few fresh points of interest. There is at the same time a certain depression observable for the moment in various Belgian industrial centres. On the one hand, purchasers hesitate to give out orders for iron; and, on the other hand, iron-masters exhibit a disinclination to conclude contracts for the renewal of future supplies of coal, coke, or pig. All that the ironmasters can do is to hope for a sudden influx of important foreign orders. Refining pig is held at 6*l.* per ton, and casting ditto at 7*l.* 4s. per ton. Plates have been quoted as high as 18*l.* per ton. A rather important advance has been noted in scrap-iron in the Charleroi basin.

There is a temporary check or stagnation in the French iron trade. Everyone maintains an attitude of expectation. The ironmasters affect to predict an approaching advance in prices with a serious revival in affairs, while operators for a fall, or advocates of a fall, or believers in a fall point with confidence to what they term "normal prices" in an early future. Concessions have certainly been made of late by several important rolling-mills. Upon the whole, however, there is a general firmness in quotations, although there is a good deal of hesitation in the market. First-class merchants' iron is quoted at 13*l.* 12s. per ton; charcoal-made ditto, 15*l.* to 15*l.* 8s. per ton; and mixed ditto, 14*l.* 8s. to 14*l.* 16s. per ton. Charcoal-made sheets have brought 16*l.* 8s. to 17*l.* 4s. per ton; mixed ditto, 16*l.* to 16*l.* 8s. per ton; and coke-made, 16*l.* 16s. to 18*l.* 16s. per ton. Charcoal-made is offered in Champagne at 7*l.* 12s. per ton, and English pig, No. 3, is quoted at St. Dizier at 6*l.* 16s. to 7*l.* 4s. per ton. Three important new concessions of minerals have recently been solicited in France. The first of these concessions was applied for by the Franche-Comté Blast-Furnaces, Foundries, and Rolling-Mills Company; the second by MM. Dauxelle Frères, of the Haute-Marne; and the third by the Val-d'Osne Blast-Furnaces and Foundries Company. The creation is announced of some extensive new works near Neuves-Maisons, in the Meurthe, which will be conducted by the Haute-Moselle Metallurgical Company; the oolitic minerals of Chavigny and Chaligny will be worked in connection with the undertaking. Official statistics have just appeared in illustration of the commerce of France during the first 10 months of 1872. It appears from these returns that the importations of minerals into France in the first 10 months of last year amounted to 571,304 tons, against 517,005 tons in the corresponding period of 1869, the last year of complete peace enjoyed by France, showing an augmentation last year of 47,299 tons, or 15 per cent. The imports in the first 10 months of 1872 were made up as follows:—Belgium, 85,879 tons; Germany, 17,898 tons; Spain, 149,798 tons; Italy, 95,866 tons; Algeria, 216,755 tons; and other countries, 5708 tons. The imports have largely increased from Spain, Italy, and Algeria, and they have fallen off as regards other countries. The exports of minerals from France have considerably increased of late years, having amounted in the first 10 months of last year to 304,000 tons, against 201,000 tons in the corresponding period of 1869. The imports of iron in bars into France in the first 10 months of last year amounted to 18,807 tons, against 45,396 tons in the corresponding period of 1869.

Chilian copper in bars has brought 90*l.* 8s. per ton at Havre; ditto in bars at Paris, 90*l.* 8s. per ton; ditto in ingots, 96*l.* per ton; English tough cake has realised 94*l.* 10s. per ton; and Corocoro minerals, pure standard, 94*l.* per ton. At Marseilles, Chilian and Peruvian have been quoted at 92*l.* per ton. At Rotterdam the quotation for Drontheim has been 50 fl. to 52 fl. As regards tin, the unsold stock of Banca of the Dutch Society of Commerce at the close of 1872 was estimated at 66,513 blocks, as compared with 32,307 blocks at the close of 1871, 80,079 blocks at the close of 1870, 60,800 blocks at the close of 1869, and 45,941 blocks at the close of 1868. The quantity of Banca under sail at the close of 1872 was estimated at 22,350 peculs, as compared with 10,380 peculs at the close of 1871. The stock of Billiton at Amsterdam and Rotterdam at the close of last year was estimated at 14,873 blocks, against 1756 blocks at the close of 1871. At Paris, Banca tin, delivered at Havre or Paris, has brought 156*l.* per ton; Straits, delivered at Havre or Paris, 146*l.*; and English, delivered at Havre or Rouen, 146*l.* per ton. At Amsterdam the quotation for Banca has been 85½ fl. to 86 fl.; and for Billiton, 82 fl. to 82¼ fl. At Paris, French lead, delivered at Paris, has realised 23*l.* per ton; ditto Spanish, delivered at Havre, 22*l.* 16s. per ton; and ditto English, delivered at Havre, 23*l.* per ton. At Amsterdam, Stolberg lead of various marks has realised 13½ fl.; and German of various marks, 13 fl. At Paris, Silesian zinc delivered at Havre, has made 24*l.* 16s.; ditto other good marks, delivered at Havre, 24*l.* 16s. per ton; ditto, delivered at Paris, 24*l.* 16s. per ton.

There is little fresh to report with respect to the French coal trade, but prices of some descriptions have slightly given way, in consequence of the mildness of the season. The possibility of an increase in the production of the basins of the Nord and the Pas-de-Calais has been engaging general attention in the district. The insufficiency in the extraction, which made itself felt last year, renders it extremely desirable and important that something should be done in the matter, and it appears probable that the extraction of the basins both of the Nord and the Pas-de-Calais is on the point of acquiring a considerably increased development, thanks to the efforts which are being put forward by companies, which appear determined to make considerable sacrifices in order to attain the desired object. Statistics collected for the first ten months of 1872 show that the imports of coal into France during that period amounted to 5,894,231 tons; of this total, 3,614,743 tons came from Belgium. The imports of coke into France during the first ten months of last year were 407,464 tons, of which 349,577 tons came from Belgium. The exports of coal from France in the first ten months of last year were 609,931 tons; in this total Belgium figured for 98,704 tons, or 28,000 tons more than in the ten corresponding months of 1869, the last year before the Franco-German war. The Ahun Collieries Company has been paying a dividend for 1871-2 at the rate of 1*l.* 4s. per share.

All the Belgian collieries are working to the utmost of their productive powers, the production being, in fact, only limited by the want of labour, or by the means of extraction being insufficient. Some contracts are stated to have been concluded for the first few months of this year at the current rates of the day, but, as a rule, large purchasers have only bought very sparingly at present prices. All expectation of a further advance in prices seems to be at an end for a time. Notwithstanding that there is a continued want of rolling stock upon the railways, disposable supplies of coal are of no great importance. Some descriptions of coal can scarcely, indeed, be obtained at all. Navigation on the Sambre and upon most of the other Belgian rivers has been resumed, and a considerable number of boats have been enabled in consequence to clear from Charleroi. The Courcelles-Nord Collieries Company will commence on the 15th inst. a distribution of 3*l.* per share, of which 1*l.* is for interest, and 2*l.* for an interim dividend for 1872.

In the Ruhr district coal has become scarcer and dearer than ever. Coke makes 2*l.* 8s. per ton, and can scarcely be obtained even at that price, producers having contracted, if not for the whole of this year, at any rate for the first half of it. The great Krupp works have even wanted coke and coal of late. There are great complaints as to the insufficient supply of rolling stock upon the local railways. Thus, while the collieries accommodated by the Cologne and Minden Railway ordered between Oct. 16 and Oct. 29 3784 trucks they only received 2608, and when they required 4324 trucks they only secured 2395. It results from these insufficient supplies of rolling stock that the works remain without coal, and that the collieries are obliged either to accumulate stocks or to restrict their extraction. The association of Ruhr colliery proprietors has petitioned the German Government to compel the Cologne and Minden Railway Company to improve the present state of affairs, but up to the present time these representations have not been attended with much success, and have not received much attention.

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UTAH SILVER MINING COMPANY.—The result of the meeting of this company held on the 2d inst. will, it is hoped, inaugurate the commencement of more successful working of the valuable lead property belonging to it, and the shareholders will doubtless respond at once and raise the necessary capital by debentures. It will be a source of considerable gratification to Mr. Henry Sewell to find that the plan of concentration by jiggers which he has so earnestly and continually advocated since February last, as being the only means of securing profit to the shareholders, is now to be carried out energetically at the Utah Mines, and that there is yet a chance, and a good chance too, of the property realising the title which Mr. Sewell has given it of its being the American Van Mine—the richest lead mine in the world.

## FOREIGN MINES.

ST. JOHN DEL REY.—Morro Velho, Dec. 5: Sinking on vertical shafts during the month of November:—

| | | Total. |
|---|---|---|
| A shaft | 4 fms. 0 ft. 2 in. | 141 fms. 2 ft. 5 in. |
| B shaft | 4 fms. 0 ft. 1 in. | 139 fms. 1 ft. 6 in. |
| Total | 8 fms. 0 ft. 3 in. | |

Work going on steadily, and fair progress is being made.

DON PEDRO.—Extract from letter dated Nov. 29: Produce weighed to date, 3537 oits.; estimate for month, 5217 oits. Mine Captain's letter, dated Nov. 28: All points in operation are progressing favourably, and the stopes whence the ores are being derived are much the same as when last advised. The stopes in the underlie lode in the rise to explore this is hard and small, and not sufficiently rich to value. The stopes in No. 6 shoot near the bottom of the mine are approaching the southern part of the shoot where the lode has become smaller and of less value. A small quantity of boxwork for the wash-house has been taken from the stopes in No. 8 shoot below the "tattoo," midway between the adit and 25 fathom level; although this work is only of moderate quality for boxes, it is encouraging to see the richer portion of this shoot widening as it descends. The stopes in other part of shoot are without change.—Prospective Works: The permanent incline is being carried on as usual.—Drainage: The 6-in. pitwork in the incline from the bottom of Vivian's shaft is set in motion, and works well. The 30 fm. level cross-cut is commenced, and is being pushed on with all possible speed.—Explorations: In Dawson's mines lines of good-looking jacotinga have again been encountered, but from since the first has proved auriferous. No change has taken place in any other point to notice.

ROSSA GRANDE.—Extract from letter dated Nov. 28: Bahu: We are at present preparing the necessary work for fixing a plunger-pole below the 28 fm. level in place of the drawing-lift, which is about 32 fathoms in length; this will eventually effect a great saving to the company, as the friction in the pumps, with the existing arrangements, is very great. The lode in the bottom of sump shaft continues of fair size and quality, being at present 4 feet wide. In the 28 fm. level west the lode has become narrower since last advised; it is now 2 feet wide, of average quality. The lode in the 28 west has increased in size to 8 ft. wide since last reported on; samples taken from 3 feet of the lode above the footwall show it to be of good quality, whilst further towards the headwall they do not give so favourable a result. There is no change in the lode in the 18 west since last advised, it being still about 2 feet wide. The lode in the 10 west has become somewhat more contracted since my last advices, being now 1 ft. 6 in. wide, but is still producing exceedingly rich ore. In the exploration eastward we occasionally meet with good auriferous stones; the indications of the lode at this point are very favourable.—Cachoeira: The lode in the bottom of Richard's shaft is 1 ft. 6 in. wide, of fair quality. The lode in the 20 east is at present small, being 1 ft. 8 in. wide, of good quality. In the 10 east the lode has greatly improved in yield since my last report, being worth, according to samples, 10 oits. of gold per ton, and 2 feet wide. In No. 2 cross-cut we have met with several auriferous branches of lode, but the main body is not yet intersected.

ANGLO-BRAZILIAN.—Extract from letter dated Nov. 29: No improvement to note at either deep adit bottom stope or Foster's south-west; the lode still disordered, with a lower proportion of pyrites than formerly. Dawson's top lode has contributed largely, its size fully maintained, and the quality of the ore somewhat higher. The average produce per ton for month has slightly decreased.

GENERAL BRAZILIAN.—The directors have received a letter from T. Treloar, dated Nov. 28, advising his arrival at the mines on the 22nd. His report may be expected by next mail.

SAO VICENTE.—Extract from letter dated Nov. 28: The mine operations at Brucuta are now confined to the driving of deep adit and No. 1 level, the ground in each place is auriferous, but nothing to pay. At the Sao Vicente Mine operations are confined to the large deposit of quartz, but I have not done any stamping since writing you on the 16th inst., as I have sent a carpenter from Brucuta to put the stamps in proper repair before their notice expires.

LONDON AND CALIFORNIA.—The directors have advices dated San Francisco, Dec. 6: At the Original Amador Mine the improved appearance continues. The ledge followed by the winze below the 5th level seems to unite with the east ledge, which has been intersected. The rock looks fair. The fifth level north, which was turned westward, has intersected a nice ledge, which seems worth 815 to 820 per ton. Upon the whole, the appearance of the mine is greatly improved in the last week or ten day. Telegrams to Jan. 4 report shaft still improving. From the Erie Mine there was nothing new to communicate. At the Pennsylvania Mine the winze from fifth to sixth levels has been holed, and good ventilation established. They had received $1625·45 worth of gold for previous month's work, but the mill only ran three or four days.

EMMA.—Telegram from Salt Lake City, Jan. 1:—Raised 180 tons first-class ore last week: 540 tons first-class raised ore at mine and railway depôt: 360 tons sold here.—(Signed) HUSSEY. [An evident error in cypher rendered it necessary to have this message repeated—hence the delay in publishing—540 tons includes 50 tons omitted in previous telegram.]

I. X. L. (Gold and Silver).—L. Chalmers, Dec. 16: Five men are at work on the hoisting frame, and I expect to have it in place this week. I have secured the services of an excellent foreman, who will be here next Monday. I am examining the title deeds to the Nye's Rancho and mill site, and as soon as everything is found satisfactory the purchase will be completed.

EXCHEQUER.—L. Chalmers, Dec. 16: The frames for the hoisting-sheaves are more than half way towards completion, and I hope in my next report to announce the commencement of sinking operations.

BATTLE MOUNTAIN.—Capt. Richards, Dec. 12: Virgin: The drift north from the bottom of Daniel's winze, 32 ft. below the 113 ft. levl, has for the present been suspended: there is nothing discovered as yet, but this point will be resumed shortly, when I hope we shall open on a piece of ore ground. The 113 ft. level being driven north has improved, and is now producing some good stones of ore. The 73 drift north is yielding a little ore at times, but the lode there is in a disordered state. There is nothing new to mention in regard to the stopes this week; 330 sacks raised this week. Total waiting shipment, 5533 sacks.

SIERRA BUTTES.—The favourable opinion which Mr. Hague formed of the property from his partial inspection—he took malarial fever at the mines, and has ever since been invalided—is explained in a letter dated Dec. 7, which he has addressed to the San Francisco agents of the company. With regard to the Eureka his impressions are in the main very favourable. The mine contains large reserves of quartz, of mixed grades in quality, but all likely to give such an average yield as will afford a handsome margin for profit, especially when the new method of operation is in working order. Below the Railroad tunnel they have developed a magnificent vein of quartz, 25 ft. to 30 ft. thick, yielding without assortment, according to the mill results, about $25 per ton. The old Mammoth tunnel must be re-opened to cut the vein 300 ft. below the present Railroad tunnel. This will afford cheap and easy outlet for quartz for years to come. It will require money and patience, but will well repay outlay on the reduced cost of working. The foundations of the new mill were being laid during his visit. When the newly-adopted plan of operations is once fairly in working order it will be possible to extract and work quartz at a fair profit that could not hitherto be handled without loss. Altogether, he considers they are warranted in predicting for the future of the mine the most satisfactory results.

CAPE COPPER.—Bills of lading are received for 510 tons of ore and 26 tons of reglus per Juliet Daniel, and 265 tons of ore (part cargo), per Antonio Vinent, which vessel has proceeded to Hondeklip Bay to complete cargo. The Sea Foam, with 560 tons of ore, has arrived at Swansea. The Mabel, chartered to load about 330 tons to Swansea, would leave Cape Town for Port Nolloth about December 7.

BENSBERG (Lead Mining and Smelting).—Jan. 4: Manager's Report for December: The weather was no more favourable for surface work this month than it was in November. The earth had gradually become saturated with water, the adjacent brooks swollen, pools formed in the hollows, so that we were not surprised when we found the water appearing on the bottom floor of the open-cast, as this floor, being the deepest, naturally yields the richest ore; we spared no exertions to keep it dry, or at least to prevent the water from rising. The pump was worked to the utmost, fortunately we had received a supply of good coal, and could keep up plenty of steam, but still the water rose until it had covered the entire floor. We were thus compelled to confine our operations to the upper floors, where we have chiefly wash-ore (gravelly matter mixed with fine particles of galena, which is separated by washing). As we got out much more than we could dress with our present appliances we stored it for dressing with the new machinery. The quality of this wash-ore was throughout very good—the richest sample assayed, as taken from the ground, contained 29 per cent. of lead; an average sample of the mass assayed 15 per cent. The appearance of the ground is highly satisfactory, and the opinions of well-known mining men that a rich lode will be found in the deep is becoming daily more substantiated by the disclosures made as we work forward on the various floors. A strong string of galena and carbonate runs from east to west, as shown on the map, increasing from 3 feet to 4 feet thick. The top of this string is mostly carbonate, which, however, disappears on going deeper, and gives place to galena. We invoiced to the Stolberg Company 503½ tons, which assayed 42 per cent. of lead and 18½ grammes of silver, and realised 2263 thalers. We further delivered 70 tons, assaying on average 40 per cent., which has not yet been invoiced, the assay not yet being confirmed by the Stolberg Company, besides this we got out and stored 120 tons of wash-ore. The number of hands employed on the mine was 73 all told, of which 45 were employed in getting ore, dressing, clearing ground, &c., and 28 in erecting plant and buildings. The wages for the month amounted to 1056 thalers. An inclined plane was cut and finished into the open-cast during the month, on which a tramway will shortly be in use. The progress of the buildings would have been greater had the weather been more favourable, however I am glad to say we are now quite prepared to receive the machinery, this I expect will commence being delivered early this month, and no time will then be lost in getting everything into position.

— Sub-Manager's report for quarter ending Dec. 31: The work done during the past three months consisted chiefly in continued clearing of ground, and getting ore from the opencast; thereby it was proved that the carbonate found near surface is a decomposition of solid galena. A disclosure latterly made on the deepest floor of the opencast shows plainly that a solid bed of galena, similar to a lode, exists, which has a thickness of about 3 ft., and dips at an angle of from 50° to 60°, running out almost horizontally at the outcrop, and extending in this way through the open-cast. That part of the bed extending horizontally, and the surrounding rock, which consists of Devonian limestone, have become decomposed by the action of the atmosphere, forming an earthy carbonate of lead, which contains from 25 to 72 per cent. of lead. There can be no doubt that in the deep the carbonate will entirely disappear, as the atmosphere could not act in the same manner here as at the surface, and undecomposed galena will here be found, which is very plainly illustrated in a profile formed in the open-cast. The value and future success of the mine is very satisfactorily proved by this disclosure, and the mine will, if no geonostical interruptions occur, gradually become more and more extensive, and promises to become highly remunerative. Hitherto the ore has been brought to surface in hand-barrows, which is very expensive and laborious work; shortly it will be done in wagons drawn on rails by horses, up an inclined plane. A Hayward's pump, which is fixed in the Victoria shaft, several yards below the level of the open-cast, serves for pumping the water from the mine. The continued rains during the latter part of the year, which have placed every mine in the neighbourhood more or less under water, have increased the usual regular flow of water to such an extent that it was not possible to sink the shaft any deeper with the afore-mentioned pump. It, is, however, the intention of the management to carry down the said shaft 66 ft. (20 meters), and to drive a level at this depth under the opencast, partly to explore and open out the lode thoroughly at this depth, and partly to bring ore from the open-cast to the surface through this level and the Victoria shaft, by means of steam-power, whereby larger quantities may be raised at less expense. The open-cast will be carried down until the level (20 metres deep) is reached, after which it may be found desirable to resort to deep mining. The new dressing-house is under roof, so that winter weather will form no obstacle to fixing the machinery. The second boiler is bricked, after having been tested by the Inspector of Mines; and the engine for the dressing machinery is being mounted.

PONTGIBAUD.—Jan. 2: Roure: The driving of the 100 cross-cut east from Richards's shaft has been retarded by a great influx of water, but now goes on regularly again. The driving of the 60 cross-cut, in the same direction, is rather slow, the ground having become much harder. In the 80 metre level, north of cross-cut, the lode is large and strong, composed chiefly of quartz, spotted with ore. The rise in back of the 80 south is unproductive. The 60 south yields a little low quality orestuff. The same level north yields ¼ ton of ore per metre. The two rises in this level yield average quality orestuff. The 40 north has entered a piece of disordered ground driven through in the 20, but will soon again enter productive ground. The 40 south yields stones of ore. The 20 north yields ¼ ton of ore per metre, and the same level south yields ½ ton. The adit north yields ¼ ton of ore per metre. The winze behind this end is poor. The Mill shaft is being sunk in favourable rock, now down 12 metres below the adit. The adit south of this shaft yields ¾ ton of ore per metre. The rise in the back yields ½ ton. At La Grange the winze in the 100 metre level north yields saving work. A cross-cut in the 60 north has discovered a part of the lode standing by the side of the old level, which will work to profit or tribute. The tribute pitches generally yield pretty well, but in this mine also we have had as much as our pumps could do to keep the deep workings dry. At Mioche the shaft has attained the necessary depth for the 20 metre level and fork. We have set the plat to cut preparatory to driving northward.—La Brousse: The 140 metre level cross-cut, east of Basset's shaft, is in hard, difficult rock; and, having had repairs to make between the 40 and 60 metre levels, but little progress has been effected towards cutting the lode. The 120 metre level south yields ¼ ton of ore per metre. The same level south yields ½ ton per metre. The 80 yields ¾ ton, and the 60 a little orestuff occasionally. The stopes and tribute pitches maintain their yield of ore.—Pranal: The 70 metre level north, on the main part of the lode, yields ¾ ton of ore per metre. The same level, on the eastern part, yields ¾ ton. The 70 south is unproductive. The 70, south of St. George's shaft, yields a little saving work. The 50 yields stones of ore. The 30 south is unproductive. Our tribute pitches, 22 in number, yield fairly, on the whole.—Surface: Our dressing has gone on regularly, and the samplings have amounted to 266 tons.—St. Amant: The sinking of Susan's shaft, and the driving of the 25 metre level north and south, present no change of importance. At Giroux, having met with nothing in the first cross-cut, we have suspended it, and shall shortly make a second—we hope with better success.

[For remainder of Foreign Mines see to-day's Journal.]

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GRIFFITHS'S GUIDE TO THE IRON TRADE.—A comprehensive review of the Iron Trade of Great Britian for the past year is shortly to be issued, by Mr. SAMUEL GRIFFITHS, who has for many years been a valued contributor to the *Mining Journal* on the subject of iron, and whose long connection with the trade is a sufficient guarantee of competence. In addition to a list of the principal iron-works in Great Britain, he proposes to give a chapter on the trade of North and South Staffordshire, particulars of the leading factories, with names of proprietors in the different firms, and similar information with regard to Shropshire, Northamptonshire, and West Cumberland. The chief foundries and works occupied in the manufacture of steam-engines and machine tools will likewise be referred to—so that the book altogether promises to be of considerable value, not only to iron and coal masters, but also to those only indirectly connected with the trade.

COAL MINES REGULATION ACT.—The second edition of Mr. J. WILLIM HALL'S treatise on this Act has just been issued, the fact of the first edition having been exhausted in a month affording good evidence that its merits have been extensively appreciated. The action of the Home Office in the matter being now known, Mr. Hall has been enabled to perfect his annotations, which have been carefully revised and considerably extended. He remarks that some may think that British Mining Enterprise is being swathed in too great a profusion of swaddling clothes, and that the restrictions and regulations imposed are a little too specific and minute; he thinks, however, that it may be as in skilled book-keeping, multiplicity of accounts tends ostensibly to intricacy, but really to simplicity, so will the miner (both master and man) be gradually educated into habits of precision and order conducive to his ultimate, if not immediate, comfort and prosperity. By way of introduction a very complete epitome of the Act is given, and although extending over only 16 pages will enable anyone carefully perusing it to determine without difficulty in what part of the Act any particulars he may require will be found. There is also a greatly extended table of contents, which will prove very useful, and frequently save much time in referring to the body of the Act, whilst in the reprint of the Act itself some improvements have been made in the printing of the side-notes, which will add greatly to the utility of the book.

COLLIERY MANAGERS' POCKET-BOOK AND DIARY.—The fourth edition of this almanac has just been issued (by Mr. Hutchings, *Colliery Guardian* Office, London), and contains, as usual, all the practical information likely to be required from a book of reference by the class for whom it is intended. In addition to the usual calendar matter and an excellent diary, a week in an opening, there are some really useful articles on ventilation, safety-lamps, the use of the barometer and water-gauge, specific gravity, weight of materials, labouring forces, steam-engine notes, and numerous tables.

SCOTT BROTHERS' MINING ALMANAC.—This is a sheet almanac giving details of the strength of ropes manufactured by the firm which issues it. Several useful tables are given, including a comparative table of round and flat ropes, in iron, steel, and hemp, for winding in pits, on planes, &c., and rules for finding the breaking strain and weight which may be safely appended to a hemp rope: the circumference in inches is squared, and the product divided by 4 to find the breaking weight, and by 10 to find the safe weight in tons.

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PUMPING ENGINE AT THE TRIMDON GRANGE COLLIERY.—About a year and a half since a direct-acting pumping engine was erected at the Trimdon Grange Colliery by Messrs. HAYWARD TYLER and Co., of London. The diameter of the steam cylinder of this engine is 40 in., that of the rams 10 in., the pump-plungers having a 4-ft. stroke. The steam cylinder is placed in the centre, having at each end a pump of the ordinary ram or plunger type. The suction and delivery valve boxes are placed on each side, and each box contains two gun-metal valves 6 in. in diameter, and of the mushroom form. The valve motion is of a special kind, and has been fully described by us in a previous volume. The whole of the combined apparatus is carried on a solid bedplate, and the pumps are so arranged that they can be drawn off endways if required, a planed groove being formed in the bedplate to keep them true. A pumping-engine of this description requires no very accurate adjustment of level, as it is self-contained, and all the strains are direct from the steam cylinder to the pumps, which at their under side are attached to the bedplate, and are supported by a strong stay above. The engine at the Trimdon Colliery is placed in a headway cut for its reception at a depth of 400 feet from the surface, and a short distance from the main shaft. The pump takes its water from a sump, into which the level drains. There are two levels in the mine, one about 14 fathoms below the other, and the water is pumped from the lower to the higher level, in which the direct-acting pump is placed, and where the greater portion of the water is met with. Formerly the main bulk of the water was raised by a large Cornish engine, but this being found insufficient to do the work, the 40-in. cylinder engine of Messrs. Hayward Tyler and Co. was put down. The water from the higher level drains into a sump, placed near the pump, by which it is forced up the upcast shaft to the surface, and then into a tank placed some 30 ft. higher. From this tank it is carried through pipes by gravity to a reservoir on the hills side, some distance away beyond the colliery village, and being clean it serves for the use of the villagers, a constant supply being thus maintained, which has proved useful in cases of fire. The steam for this engine is generated in the Cornish boilers at the surface, and is carried down the up-cast shaft by a 6-in. steam-pipe, and along a headway cut specially for the purpose. The exhaust steam is turned into the up-cast through another special heading. The rising main is 8 in. in diameter, and is fitted with a small air vessel placed near the pumps. The pumping-engine continues to do its work in a satisfactory manner, and at a recent trial made by Mr. R. Forster, the engineer to the proprietor of the collieries, it was found that the pump was throwing to bank,—a distance of 400 feet above itself—245½ gallons of water per minute, the pump running at 10 strokes; thus doing 89·5 per cent. of its theoretical duty.—*Engineering.*

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## COPPER ORES.

Sampled December 18, and sold at Swansea, January 7.

| Mines. | Tons. | Produce. | Price. | Mines. | Tons. | Produce. | Price. |
|---|---|---|---|---|---|---|---|
| Union Ore | 70 | 5½ | £4 5 0 | Sobral Ore | 54 | 12½ | £10 15 6 |
| ditto | 70 | 5¼ | 4 3 0 | ditto | 40 | 17⅝ | 15 6 6 |
| ditto | 70 | 5½ | 4 5 0 | ditto | 8 | 23½ | 20 7 0 |
| ditto | 6½ | 5½ | 4 5 0 | ditto | 9 | 5½ | 4 3 0 |
| ditto | 83 | 11¾ | 9 7 6 | Ballycum'isk | 100 | 7½ | 5 17 0 |
| ditto | 56 | 10½ | 7 15 0 | Coosheen | 14 | 7¾ | 6 6 0 |
| ditto | 56 | 10½ | 8 3 6 | Fursdon | 94 | 5⅞ | 4 12 6 |
| Cape Ore | 87 | 27 | 23 19 6 | Concordia | 59 | 45¾ | 39 7 6 |
| ditto | 81 | 26¾ | 23 17 6 | ditto | 3 | 25½ | 22 11 0 |
| ditto | 26 | 33¾ | 29 10 0 | Copper Reg. | 16 | 38½ | 33 10 6 |
| ditto | 2 | 32¾ | 29 0 0 | Copper Ore | 4 | 9¾ | 7 8 0 |
| ditto | 64 | 30¼ | 27 5 6 | ditto | 1 | 15⅜ | 12 13 0 |
| ditto | 64 | 30¼ | 27 5 6 | Copper Ref. | 5 | 4⅞ | 1 0 0 |
| ditto | 38 | 26¾ | 24 6 6 | Berehaven | 134 | 8½ | 7 1 0 |
| Sobral Ore | 118 | 5⅞ | 4 13 6 | ditto | 117 | 10 | 8 11 0 |

TOTAL PRODUCE.

| | | | | | | |
|---|---|---|---|---|---|---|
| Union Ore | 474 | £2848 | 13 6 | Concordia Reg. | 62 | £2390 15 6 |
| Cape Ore | 362 | 9260 | 5 0 | Copper Regulus | 16 | 536 8 0 |
| Sobral Ore | 229 | 1946 | 13 0 | Copper Ore | 5 | 42 5 0 |
| Ballycummisk | 100 | 585 | 0 0 | Copper Refuse | 5 | 5 0 0 |
| Coosheen | 14 | 88 | 4 0 | Berehaven | 251 | 1945 1 0 |
| Fursdon | 94 | 434 | 15 0 | | | |

COMPANIES BY WHOM THE ORES WERE PURCHASED.

| Names. | Tons. | Amount. |
|---|---|---|
| Copper Miners' Company | 79⅓ | £ 927 18 4 |
| P. Grenfell and Sons | 117 | 1,000 7 0 |
| Nevill, Druce, and Co. | 151 | 4,161 11 6 |
| Williams, Foster, and Co. | 348½ | 4,798 1 10 |
| British and Foreign Copper Company | 13 | 383 10 0 |
| Mason and Elkington | 132 | 1,457 16 0 |
| Charles Lambert | 413 | 2,123 9 0 |
| Ravenhead Copper Company | 168 | 4,019 14 0 |
| Sweetland, Tuttle, and Co. | 172½ | 822 2 4 |
| Landore Copper Company | 18 | 388 10 0 |
| Total | 1612 | £20,083 0 0 |

NO SALE January 28.

TOTALS AND AVERAGES.

| 21 cwts. | Produce. | Price. | Per unit. | Standard. |
|---|---|---|---|---|
| Whole sale ... 1612 | 14¼ | £12 9 2 | 17s. 5d. | £109 19 6 |

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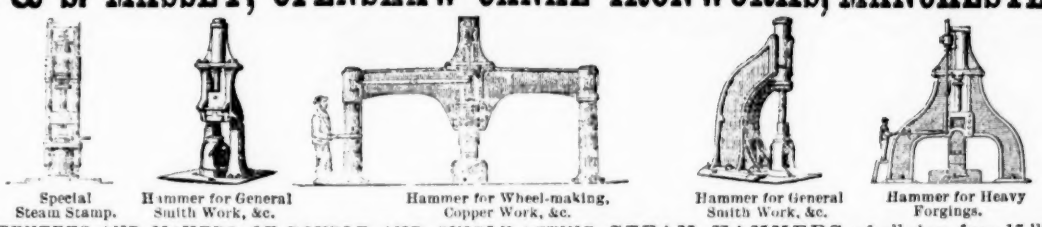

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# BURLEIGH ROCK DRILLING MACHINERY.

## THOS. BROWN, Patentee and Sole Proprietor.

Specially Applicable to

**SINKING, QUARRYING,**

AND

MINING PURPOSES.

**THE BEST & ONLY PRACTICAL DRILL.**

**IT DOES NOT GET OUT OF ORDER.**

PROGRESSES through Aberdeen granite at the incredible rate of 10 inches per minute.

SAVES £5 a day as compared with hand labour, independent of the enormous saving effected in the general expense, such as PUMPING, VENTILATION, INTEREST OF CAPITAL, &c., from the fact of the "put out" being increased four-fold.

DRILL POINTS.—The saving in steel alone is considerable. One drill will go through 20 feet of Aberdeen granite without sharpening.

Machine and Stand for Quarrying and Sinking.

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Liverpool and Manchester Agricultural Show, Sept. 12, 1872.

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# PEPPER MILL BRASS FOUNDRY COMPANY,

## DARLINGTON STREET, WIGAN,

### COLLIERY FURNISHERS,

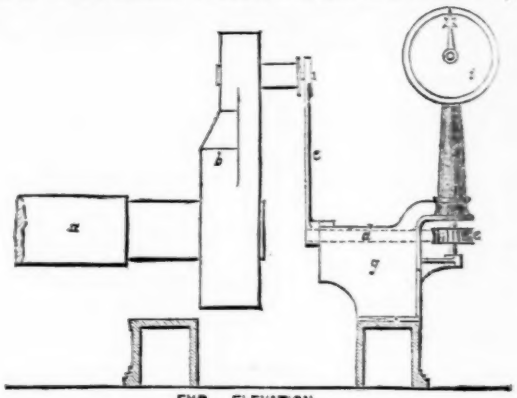
### BRASS FOUNDERS, COPPERSMITHS, & GAS METER MANUFACTURERS,

The PEPPER MILL BRASS FOUNDRY COMPANY beg respectfully to invite attention to their IMPROVED SELF-REGISTERING COLLIERY WINDING INDICATOR, which, in addition to its ordinary use of indicating the position of the load in the shaft, registers the number of windings, thus enabling the manager at a glance, and at any moment, to check the return of the banksman or tallyman, by reading off from the dial the number of windings for any stated time.

This Indicator is especially adapted for Water Winding or Pumping. Its indications cannot possibly be tampered with, and unerringly show the number of windings or strokes for any stated period, so that it will at once be seen whether or not the person in charge has been fully discharging his duty.

These Winding Indicators are supplied either with or without the Self-registration Dial.

The Pepper Mill Brass Foundry Company will be glad to furnish, on application, sets of drawings illustrative of the simplest and cheapest mode of attaching their indicators to engines of various constructions, either vertical or horizontal.

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One mode of attaching Indicator to horizontal engine.

These Indicators have been supplied to most of the principal Collieries in Lancashire, including Wigan Coal and Iron Co. (Limited); Ince Hall Coal and Cannel Co. (Limited); Messrs. Jonathan Blundell and Son; John Grant Morris, Esq.; Messrs. Pearson and Knowles; Messrs. Andrew Knowles and Sons; Cannock and Rugeley; Mostyn Coal and Iron Co.; Messrs. Pilkington Bros., St. Helens.

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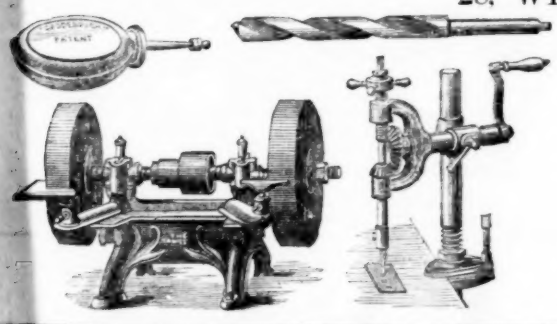

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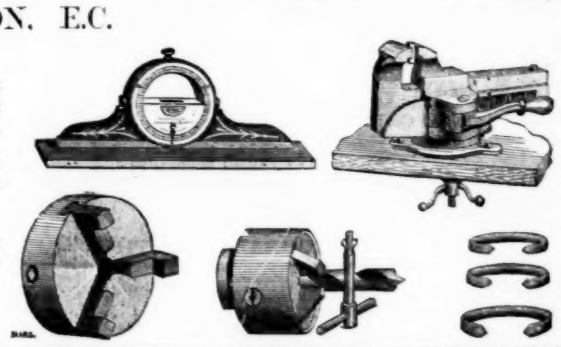

# CHAS. PRICE AND CO.'S RANGOON ENGINE OIL,

## AS SUPPLIED TO H.M. DOCKYARDS AND FLEET.

THIS OIL is suitable to every kind of Machinery. As a lubricant it is equal to the best Sperm or Lard Oil, while it possesses the great advantage of being entirely free from any principle which will corrode the metal bearings.

For particular kinds of Machinery, the Oil may be specially prepared of a consistency and character adapted to the nature of the work to be done.

"Chemical Laboratory, 7, Printing House-square, Blackfriars, April, 1869.

"I herewith certify that the Rangoon Engine Oil, manufactured by Messrs. Chas. Price and Co., is free from any material which can produce corrosion of the metal work of machinery. It is indeed calculated to protect metallic surfaces from oxidation.

"The lubricating power of this oil is equal to Sperm or Lard Oil.

"T. W. KEATES, F.C.S., &c. &c

Every parcel of the Oil sent from the work bears the Trade Mark of the Firm.

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WORKS: MILLWALL, POPLAR; and ERITH, KENT

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A LARGE STOCK OF SECOND HAND RAILS AND PLANT ALWAYS ON HAND.

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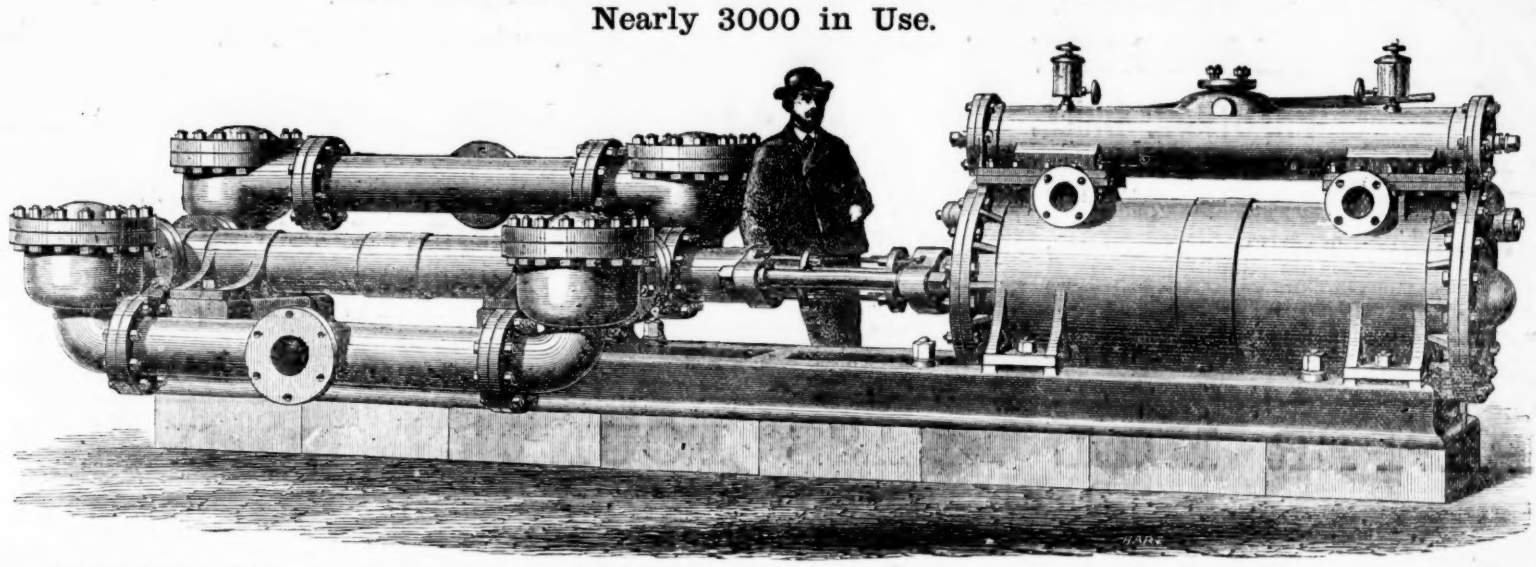
NEWCASTLE-ON-TYNE (TANGYE BROTHERS AND RAKE), OFFICES AND WAREHOUSE, ST. NICHOLAS' BUILDINGS.

SOLE MAKERS OF

# THE "SPECIAL" DIRECT-ACTING STEAM PUMPING ENGINES

## FOR FORCING WATER FROM MINES.

**Nearly 3000 in Use.**



**The "SPECIAL" Direct-acting Steam Pumping Engines require no costly Engine Houses or massive foundations, no repetition of Plunger Lifts, ponderous Connecting-rods, or complication of Pitwork, and allow a clear shaft for hauling purposes.**

**Extract from "ENGINEERING," September 6th, 1872:—**

"The accompanying engraving illustrates a large specimen of the 'Special' Steam Pump, which was brought before the public about four years since by Messrs. Tangye Brothers and Holman. The Pump is the invention of Mr. S. Cameron, of New York, and since its introduction Messrs. Tangye have turned out nearly 3000 from their works.

"These pumps are of various sizes, and at first only small ones were made, but as their usefulness became developed the manufacturers designed pumping engines on the same principle for use in collieries. They were first applied to this purpose in the Newcastle collieries about three years since, and through the efforts of the late Mr. A. Stansfield Rake, under the direction of Messrs. Tangye, about 130 of these pumps had been introduced—principally in the collieries of the Durham and Newcastle districts, up to the end of 1870. They were adapted to perform the required duty—varying in almost every case—of forcing from 1000 to 10,000 gallons per hour from depths ranging from 100 to 500 ft. The success of this system of pumps led Mr. J. Bigland, the manager of Messrs. Pease's Bishop Auckland Collieries, to conclude that it was adapted for yet heavier work. The result of his investigations into its working led to the manufacture of the engine we have illustrated, for the Adelaide Collieries, belonging to Messrs. Pease, at Bishop Auckland.

"The construction of the Special Steam Pump is so well known that we need now do no more than refer to the dimensions of the various parts. The steam cylinder is 26 in. diameter, and the pump—which is double acting—is 6½ in. diameter, with a 6-ft. stroke. The slide valve is steam-moved, and its alternate action is effected by means of two steel reversing valves, operated by the piston in the interior of the cylinder at either end. Hence there is no external mechanism except the piston rod, a few inches only of which is seen reciprocating between the stuffing boxes of the steam and pump cylinders. In the contract it was stipulated that the engine should raise 120 gallons per minute 1040 ft. high in a single lift, and this is more than accomplished, with apparently as much ease as if its load was delivered at only 100 ft. high.

"The engine-room at the Adelaide Collieries is situated at a depth of 1040 ft. below the surface, and is an arched chamber, about 100 ft. long by 20 ft. wide, and 10 ft. high at centre. At the far end of this chamber is a double-flued boiler, 27 ft. long and 7 ft. in diameter. Placed between the boiler and the shaft is the pumping engine we have been describing. It was started on June 6, 1871, and Mr. Bigland reported that, having measured its duty, he found the average of seven trials to be 137 gallons per minute, thus giving a higher duty than was stipulated for in the contract.

"A still larger Special Steam Pump than the one already described has since been made by Messrs. Tangye for Messrs. Stannier's [illegible] lieries, Silverdale, Staffordshire. The steam cylinder of this en[illegible] is 32 in. in diameter, and the water cylinder 10½ in.; the strok[illegible] 6 ft., and the engine has to raise 22,500 gallons per hour 540 ft. h[illegible] Two out of eight engines for some extensive coal mines in Germ[illegible] are also in a forward state; each of these engines is to be cap[illegible] of raising 150 gallons per minute, or 9000 gallons per hour, 75[illegible] high. This system of underground pumping engine undoubt[illegible] carries with it the recommendations of simplicity and great po[illegible] with a small number of mechanical parts. Its first cost is also [illegible] moderate, as compared with the method of raising water from g[illegible] depths by a series of 40 or 50 fm. lifts. Its practical value wa[illegible] tested in 1867 by the award of a silver medal by the Royal Falm[illegible] Polytechnic Society, which is composed chiefly of mining engine[illegible] In fact, these engines appear to solve a very important commer[illegible] question in mining operations—viz., the most economical and e[illegible] tive means of deep mine drainage. Their success has been e[illegible] blished in the coal mines of Durham and Newcastle, and there [illegible] reason why their adoption should not follow, as occasion requ[illegible] in the copper and tin mines of Cornwall, some of which are of g[illegible] depth; and especially for foreign mines, where transport conv[illegible] ence and economy are of paramount consideration."

**The "Special" Steam Pumping Engines are in use at the following among many other Collieries:—**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Adelaide Colliery, Bishop Auckland | 3 | Pumps. | North Bitchburn Colliery, Darlington | 2 | Pumps. | Stott, James and Company, Burslem | 1 | Pu |
| Acomb Colliery, Hexham | 1 | „ | Newton Cap Colliery, Darlington | 1 | „ | Straker and Love, Brancepeth Colliery | 1 | „ |
| Blackfell Colliery, Gateshead | 1 | „ | Normanby Mines | 1 | „ | Seaton Delaval Coal Colliery, near Newcastle | 1 | „ |
| Black Boy Colliery, Gateshead | 1 | „ | Oakenshaw Colliery | 1 | „ | Thornley Colliery, Ferryhill | 2 | „ |
| Castle Eden Colliery | 2 | „ | Pease's West Colliery | 2 | „ | Thompson, John, Gateshead | 2 | „ |
| Carr, W. C., Newcastle | 4 | „ | Pease, J. and J. W., near Crook | 5 | „ | Trimdon Grange Colliery | 1 | „ |
| Etherley Colliery | 1 | „ | Pease, J. and J., Brandon Colliery | 1 | „ | Tudhoe Colliery | 4 | „ |
| Gidlow, T., Wigan | 3 | „ | Pegswood Colliery, near Morpeth | 2 | „ | Vobster and Mells Colliery | 2 | „ |
| Haswell, Shotton and Easington Coal Company | 3 | „ | Pelton Fell Colliery | 1 | „ | Widdrington Colliery, Morpeth | 5 | „ |
| Lochgelly Iron and Coal Company | 2 | „ | Railey Fell Colliery, Darlington | 1 | „ | Whitworth and Spennymoor Colliery | 5 | „ |
| Lochore and Capeldrae Cannel Coal Company | 6 | „ | Right Hon. Earl Durham, Fence Houses | 1 | „ | Westerton Colliery, Bishop Auckland | 1 | „ |
| Leather, J. T., near Leeds | 2 | „ | Skelton Mines | 1 | „ | Wardley Colliery, Gateshead | 1 | „ |
| Lumley Colliery, Fence Houses | 1 | „ | South Benwell Colliery | 5 | „ | Westminster Brymbo Coal Company | 2 | „ |
| Monkwearmouth Colliery, Sunderland | 1 | „ | St. Helens (Tindale) Colliery | 1 | „ | Weardale Coal and Iron Company | 5 | „ |

**PARTICULARS OF THE "SPECIAL" STEAM PUMPING ENGINES SUITABLE FOR HIGH LIFTS IN MINES.**

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diameter of Steam Cylinder ....Inches | 6 | 8 | 10 | 8 | 12 | 16 | 10 | 14 | 18 | 21 | 14 | 18 | 21 | 26 | 16 | 21 | |
| Diameter of Water Cylinder ....Inches | 3 | 3 | 3 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 6 | 7 | 7 | |
| Length of Stroke ....Inches | 24 | 24 | 36 | 24 | 36 | 48 | 24 | 36 | 36 | 48 | 36 | 36 | 48 | 72 | 36 | 48 | |
| Strokes per minute .... | 30 | 30 | 20 | 30 | 20 | 15 | 30 | 20 | 20 | 15 | 20 | 20 | 15 | 10 | 20 | 15 | |
| Gallons per hour .... | 2,200 | 2,200 | 2,200 | 3,300 | 3,300 | 3,300 | 6,100 | 6,100 | 6,100 | 6,100 | 8,800 | 8,800 | 8,800 | 8,800 | 11,900 | 11,900 | 11,9 |
| Height in feet to which water can be raised with 40 lbs. pressure per square inch of steam at pump .... | 240 | 425 | 665 | 240 | 540 | 960 | 240 | 470 | 775 | 1,058 | 330 | 540 | 740 | 1,140 | 312 | 540 | 7 |
| Diameter of Suction and Delivery ...Inches | 2 | 2 | 2 | 3 | 3 | 3 | 3½ | 3½ | 3½ | 3½ | 4 | 4 | 4 | 4 | 5 | 5 | |
| Diameter of Steam Inlet ....Inches | ¾ | 1½ | 1½ | 1½ | 2½ | 2½ | 1½ | 2½ | 3 | 3½ | 2½ | 3 | 3½ | 4 | 2½ | 3½ | |
| Diameter of Exhaust ....Inches | 1 | 1½ | 1½ | 1½ | 2½ | 3 | 1¾ | 2½ | 3½ | 4 | 2½ | 3½ | 4 | 5 | 3 | 4 | |

**PARTICULARS, &c.—*Continued.***

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Diameter of Steam Cylinder ....Inches | 30 | 18 | 24 | 30 | 32 | 18 | 24 | 30 | 36 | 21 | 30 | 36 | 42 | 26 | 36 | 44 | |
| Diameter of Water Cylinder ....Inches | 7 | 8 | 8 | 8 | 8 | 9 | 9 | 9 | 9 | 10 | 10 | 10 | 10 | 12 | 12 | 12 | |
| Length of Stroke ....Inches | 72 | 36 | 48 | 72 | 72 | 36 | 48 | 48 | 72 | 48 | 72 | 72 | 72 | 48 | 72 | 72 | |
| Strokes per minute .... | 10 | 20 | 15 | 10 | 10 | 20 | 15 | 15 | 10 | 15 | 10 | 10 | 10 | 15 | 10 | 10 | |
| Gallons per hour .... | 11,900 | 15,660 | 15,660 | 15,660 | 15,660 | 19,800 | 19,800 | 19,800 | 19,800 | 24,400 | 24,400 | 24,400 | 24,400 | 35,240 | 35,240 | 35,240 | 35,2 |
| Height in feet to which water can be raised with 40 lbs. pressure per square inch of steam at pump .... | 1,100 | 300 | 540 | 840 | 960 | 240 | 427 | 665 | 960 | 264 | 540 | 780 | 1,062 | 282 | 540 | 800 | 1,0 |
| Diameter of Suction and Delivery ...Inches | 5 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 8 | 8 | 8 | 8 | 10 | 10 | 10 | |
| Diameter of Steam Inlet ....Inches | 5 | 3 | 4 | 5 | 5½ | 3 | 4 | 5 | 6 | 3½ | 5 | 6 | 7 | 4 | 6 | 8 | |
| Diameter of Exhaust ....Inches | 6 | 3½ | 5 | 6 | 6½ | 3½ | 5 | 6 | 7 | 4 | 6 | 7 | 8 | 5 | 7 | 9 | |

PRICES OF THE ABOVE ON APPLICATION.

**Any combination can be made between the Steam and Water Cylinders, to suit Height of Lift and Pressure of Steam.**

# TANGYE BROTHERS & HOLMAN, 10, Laurence Pountney Lane, London, E.C

Printed by RICHARD MIDDLETON, and published by HENRY ENGLISH (the proprietors), at their office, 26, FLEET STREET, E.C., where all communications are requested to be addressed.—*Jan. 11, 1873.*